WEST Search History

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DATE: Monday, July 18, 2005

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ	
☐	L89	L88 and ((Dixon) with (spiral$2 or archimed$4 or (off with center$3) or helix or helical$2 or ((curv$3 or rotat$4) with (trajectory or path or profile))))	4
☐	L88	l85 and ((Dixon) with (spiral$2 or non-linear or nonlinear or archimed$4 or (off with center$3) or helix or helical$2 or ((curv$3 or rotat$4) with (trajectory or path or profile))))	17
☐	L87	L86 and ((Dixon) with (spiral$2 or archimed$4 or (off with center$3) or helix or helical$2 or ((curv$3 or rotat$4) with (trajectory or path or profile))))	4
☐	L86	L84 and ((Dixon) with (spiral$2 or non-linear or nonlinear or archimed$4 or (off with center$3) or helix or helical$2 or ((curv$3 or rotat$4) with (trajectory or path or profile))))	17
☐	L85	L84 and (spiral$2 or non-linear or nonlinear or archimed$4 or (off with center$3) or helix or helical$2 or ((curv$3 or rotat$4) with (trajectory or path or profile)))	616
☐	L84	L1 and (Dixon)	1993
☐	L83	L80 and L69	44
☐	L82	L80 and L70	16
☐	L81	L80 and L73	16
☐	L80	(L79 or L78 or L77)	17235
☐	L79	((382/128 |382/129 |382/130 |382/131).ccls.)	2393
☐	L78	((600/407 |600/408 |600/409 |600/410 |600/411 |600/412 |600/413 |600/414 |600/415 |600/416 |600/417 |600/418 |600/419 |600/420 |600/421 |600/422 |600/423 |600/424 |600/425 |600/426 |600/427 |600/428 |600/429 |600/430 |600/431 |600/432 |600/433 |600/434 |600/435).ccls.)	7860
☐	L77	((324/300 |324/301 |324/302 |324/303 |324/304 |324/305 |324/306 |324/307 |324/308 |324/309 |324/310 |324/311 |324/312 |324/313 |324/314 |324/315 |324/316 |324/317 |324/318 |324/319 |324/320 |324/321 |324/322).ccls.)	8391
☐	L76	L70 and (Dixon)	2
☐	L75	L69 and (Dixon)	6
☐	L74	L73 and (Dixon)	1
☐	L73	L72 and (pixel or voxel or element or volume or picture)	56
☐	L72	L71 and (imag$4 or representation or display$3)	56
☐	L71	L70 and (frequency or RF or Larmor or Larmour or (radio adj frequency) or radiofrequency or radio-frequency)	57
☐	L70	L69 and ((estimat$4 or guess$4) with (map$4 or plot$4 or field or error or shift$4))	68

☐	L69	L68 and (error or difference or change or variation or shift or amount or estimat$4 or guess$4)	230
☐	L68	L67 and (ghost$3 or blur$4 or alias$3 or perturbat$4 or distort$4)	230
☐	L67	L66 and (spiral$2 or non-linear or nonlinear or archimed$4 or (off with center$3) or helix or helical$2 or ((curv$3 or rotat$4) with (trajectory or path or profile)))	312
☐	L66	L65 and (chemical$3 or species or hydrogen or water or proton or fat$2 or lipid$4 or substence or substance or specimen or tissue or Dixon or suppress$4)	543
☐	L65	L64 and ((first or second or third or multiple or plurality or "more than one" or dual or triple or "delta") with (((echo or wait$4 or repeat or repetition) with time) or "te" or "tr" or "WT"))	552
☐	L64	L63 and (map$4 or plot$4)	1635
☐	L63	L62 and (estimat$4 or guess$3)	2172
☐	L62	L61 and (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw)	5584
☐	L61	L1 and (inhomogeneity or inhomogenous or nonuniformit$4 or non-uniformit$4 or "non uniformit$4" or spurious or non-resonant or (chemical with shift$4) or ((off with resonan$3) or off-resonan$3) or susceptibil$5 or distort$4 or artifact or artefact)	40115
☐	L60	L59 and ((estimat$4 or guess$4) with (map$4 or plot$4 or field or error or shift$4))	14
☐	L59	L58 and (error or difference or change or variation or shift or amount or estimat$4 or guess$4)	62
☐	L58	L57 and ((first or second or third or multiple or plurality or "more than one") with (((echo or wait$4 or repeat or repetition) with time) or "te" or "tr" or "WT"))	62
☐	L57	L56 and L1	236
☐	L56	fetzner	261
☐	L55	L54 and (heid.in.)	12
☐	L54	vargas	2029
☐	L53	L25 and (heid.in.)	2
☐	L52	L27 and (heid.in.)	0
☐	L51	L30 and (heid.in.)	0
☐	L50	L49 and L47	19
☐	L49	((324/300 |324/301 |324/302 |324/303 |324/304 |324/305 |324/306 |324/307 |324/308 |324/309 |324/310 |324/311 |324/312 |324/313 |324/314 |324/315 |324/316 |324/317 |324/318 |324/319 |324/320 |324/321 |324/322).ccls.)	8391
☐	L48	L47 and (inhomogeneity or inhomogenous or nonuniformit$4 or non-uniformit$4 or "non uniformit$4")	27
☐	L47	L46 and ((estimat$4 or guess$4) with (map$4 or plot$4 or field or error or shift$4))	153
☐	L46	L45 and (correct$4 or compensat$4 or fix$3)	375
☐	L45	L44 and (imag$4)	389
☐	L44	L43 and (ghost$3 or blur$4 or alias$3 or perturbat$4 or artifact or artefact)	417

☐	L43	L42 and (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw)	1183
☐	L42	L41 and (frequency or RF or Larmor or Larmour)	5467
☐	L41	L40 and (error or difference or change or variation or shift or amount or estimat$4 or guess$4)	14318
☐	L40	L39 and (species or hydrogen or water or proton or fat$2 or lipid$4 or substence or substance or specimen or tissue)	14416
☐	L39	L38 and (spurious or non-resonant or chemical or shift$4 or j-coupl$4 or jcoupl$4 or ((off with resonan$3) or off-resonan$3))	14975
☐	L38	L37 and ((first or second or third or multiple or plurality or "more than one") with (((echo or wait$4 or repeat or repetition) with time) or "te" or "tr" or "WT"))	18409
☐	L37	L36 and (first or second or third or multiple or plurality or "more than one")	122572
☐	L36	L1 and (((echo or wait$4 or repeat or repetition) with time) or "te" or "tr" or "WT")	145651
☐	L35	(5192909| 5604435| 5892358)![pn]	6
☐	L34	L33 and L1	1
☐	L33	(center$4 with spiral).ti.	322
☐	L32	L31 and ((estimat$4) with (map$4 or plot$4 or field))	5
☐	L31	L30 and (spiral$2 or non-linear or nonlinear or archimed$4 or interleav$4)	34
		DB=PGPB,USPT; PLUR=YES; OP=ADJ	
☐	L30	L27	50
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ	
☐	L29	L1 and (pauley.in.)	2
☐	L28	L27 and (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw)	14
☐	L27	L1 and (pauly.in.)	91
☐	L26	L16 and (pauly.in.)	10
☐	L25	L16 and ((spiral$2 or non-linear or nonlinear or archimed$4) with (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw))	44
☐	L24	L20 and ((spiral$2 or non-linear or nonlinear or archimed$4) with (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw))	3
☐	L23	L22 and ((estimat$4) with (map$4 or plot$4 or field))	34
☐	L22	L21 and (estimat$4)	127
☐	L21	L20 and (chemical$3 or species or hydrogen or water or proton or fat$2 or lipid$4 or substence or substance or specimen or tissue)	169
☐	L20	L19 and (spurious or non-resonant or (chemical with shift$4) or ((off with resonan$3) or off-resonan$3))	179
☐	L19	L18 and (frequency or RF or Larmor or Larmour)	897
☐	L18	L17 and (((echo or wait$3) with time) or ("TE" or "WT" or "ET"))	1170
☐	L17	L16 and (map$4 or plot$4)	1207
☐	L16	L15 and (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw)	2004
☐	L15	L1 and (spiral$2 or non-linear or nonlinear or archimed$4)	13529

☐	L14	L13 and (ghost$3 or blur$4 or alias$3 or perturbat$4 or artifact or artefact)	17
☐	L13	L11 and (map$4 or plot$4)	24
☐	L12	L11 and (map$4 or plat$4)	18
☐	L11	L10 and (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw)	31
☐	L10	L2 and (spiral or archimed$4)	115
☐	L9	L8 and (estimat$4)	8
☐	L8	L7 and (((echo or wait) with time) or ("TE" or "WT" or "ET"))	15
☐	L7	L6 and (kspace and k-space and "k space" or "ky" or "ky" or "kz" or raw)	15
☐	L6	L5 and (inhomogeneity or inhomogenous or nonuniformit$4 or non-uniformit$4 or "non uniformit$4")	39
☐	L5	L4 and (chemical$3 or species or hydrogen or water or proton or fat$2 or lipid$4)	63
☐	L4	L3 and (map$4)	74
☐	L3	L2 and (ghost$3 or blur$4 or alias$3 or perturbat$4)	207
☐	L2	L1 and ((off with resonan$3) or off-resonan$3)	1136
☐	L1	((magnetic adj resonance) or MRI or NMR)	207104

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Search Results - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 20050033153 A1

L87: Entry 1 of 4 File: PGPB Feb 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050033153
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050033153 A1

TITLE: Dixon Techniques in spiral trajectories with off-resonance correction

PUBLICATION-DATE: February 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Moriguchi, Hisamoto	Cleveland	OH	US	
Lewin, Jonathan S.	Baltimore	MD	US	
Duerk, Jeffrey L.	Avon Lake	OH	US	

US-CL-CURRENT: 600/410

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 20050017717 A1

L87: Entry 2 of 4 File: PGPB Jan 27, 2005

PGPUB-DOCUMENT-NUMBER: 20050017717
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050017717 A1

TITLE: Chemical species suppression for MRI imaging using spiral trajectories with off-resonance correction

PUBLICATION-DATE: January 27, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Duerk, Jeffrey L.	Avon Lake	OH	US	
Lewin, Jonathan S.	Baltimore	MD	US	
Moriguchi, Hisamoto	Cleveland	OH	US	

US-CL-CURRENT: 324/307; 324/306, 324/309

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

3. Document ID: US 20050033153 A1, WO 2004097387 A2

L87: Entry 3 of 4 File: DWPI Feb 10, 2005

DERWENT-ACC-NO: 2004-804834
DERWENT-WEEK: 200512

TITLE: Image construction method using magnetic resonance imaging data, involves processing MRI image data and deblurring water/fat images as function of off-resonance frequency of signals

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

4. Document ID: US 20050017717 A1, WO 2004086060 A2

L87: Entry 4 of 4 File: DWPI Jan 27, 2005

DERWENT-ACC-NO: 2004-728789
DERWENT-WEEK: 200509

TITLE: Magnetic resonance imaging optimizing method involves determining chemical species e.g. water and fat at image location of scanned object, based on estimated off-resonance effects e.g. field inhomogeneity in images

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

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Term	Documents
DIXON	31805
DIXONS	39
OFF	3434112
OFFS	27158
HELIX	88248
HELICES	18973
HELIXES	3508
TRAJECTORY	56621
TRAJECTORIES	17064
TRAJECTORYS	5
(L86 AND ((DIXON) WITH (SPIRAL$2 OR ARCHIMED$4 OR	

(OFF WITH CENTER$3) OR HELIX OR HELICAL$2 OR ((CURV$3 OR ROTAT$4) WITH (TRAJECTORY OR PATH OR PROFILE))))).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	4

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Search Results - Record(s) 1 through 17 of 17 returned.

☐ 1. Document ID: US 20050033153 A1

L88: Entry 1 of 17 File: PGPB Feb 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050033153
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050033153 A1

TITLE: Dixon Techniques in spiral trajectories with off-resonance correction

PUBLICATION-DATE: February 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Moriguchi, Hisamoto	Cleveland	OH	US	
Lewin, Jonathan S.	Baltimore	MD	US	
Duerk, Jeffrey L.	Avon Lake	OH	US	

US-CL-CURRENT: 600/410

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 20050033056 A1

L88: Entry 2 of 17 File: PGPB Feb 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050033056
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050033056 A1

TITLE: Hydroxylated indole derivatives and uses thereof

PUBLICATION-DATE: February 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Wong, Nancy	N. Andover	MA	US	

US-CL-CURRENT: 546/201

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20050017717 A1

L88: Entry 3 of 17 File: PGPB Jan 27, 2005

PGPUB-DOCUMENT-NUMBER: 20050017717
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050017717 A1

TITLE: Chemical species suppression for MRI imaging using spiral trajectories with off-resonance correction

PUBLICATION-DATE: January 27, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Duerk, Jeffrey L.	Avon Lake	OH	US	
Lewin, Jonathan S.	Baltimore	MD	US	
Moriguchi, Hisamoto	Cleveland	OH	US	

US-CL-CURRENT: 324/307; 324/306, 324/309

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 4. Document ID: US 20030187256 A1

L88: Entry 4 of 17 File: PGPB Oct 2, 2003

PGPUB-DOCUMENT-NUMBER: 20030187256
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030187256 A1

TITLE: Benoxazinones/benzothiazinones as serine protease inhibitors

PUBLICATION-DATE: October 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Berryman, Kent Alan	Gunnison	CO	US	
Downing, Dennis Michael	Ann Arbor	MI	US	
Dudley, Danette Andrea	Ann Arbor	MI	US	
Edmunds, Jeremy John	Ypsilanti	MI	US	
Narasimhan, Lakshmi Sourirajan	Canton	MI	US	
Rapundalo, Stephen Taras	Ann Arbor	MI	US	

US-CL-CURRENT: 544/51; 540/490, 544/105

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 5. Document ID: US 20020086866 A1

L88: Entry 5 of 17 File: PGPB Jul 4, 2002

PGPUB-DOCUMENT-NUMBER: 20020086866
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020086866 A1

TITLE: Quinoxalinones as serine protease inhibitors

PUBLICATION-DATE: July 4, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Dudley, Danette Andrea	Ann Arbor	MI	US	
Edmunds, Jeremy John	Ypsilanti	MI	US	

US-CL-CURRENT: 514/248; 514/249, 514/251, 514/264.1, 514/266.1, 544/236, 544/257, 544/279, 544/283, 544/350, 544/353

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 6. Document ID: US 6916805 B2

L88: Entry 6 of 17 File: USPT Jul 12, 2005

US-PAT-NO: 6916805
DOCUMENT-IDENTIFIER: US 6916805 B2

TITLE: Quinoxalinones as serine protease inhibitors

DATE-ISSUED: July 12, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dudley; Danette Andrea	Ann Arbor	MI		
Edmunds; Jeremy John	Ypsilanti	MI		

US-CL-CURRENT: 514/221; 514/183, 540/460, 540/473, 540/504, 540/505, 540/514, 540/517, 540/521

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 7. Document ID: US 6855726 B1

L88: Entry 7 of 17 File: USPT Feb 15, 2005

US-PAT-NO: 6855726
DOCUMENT-IDENTIFIER: US 6855726 B1

TITLE: Quinolones as serine protease inhibitors

DATE-ISSUED: February 15, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dudley; Danette Andrea	Ann Arbor	MI		
Edmunds; Jeremy John	Ypsilanti	MI		

US-CL-CURRENT: 514/312; 514/241, 514/252.1, 514/256, 544/180, 544/238, 544/242, 544/336, 546/157, 546/158

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 8. Document ID: US 6509335 B1

L88: Entry 8 of 17 File: USPT Jan 21, 2003

US-PAT-NO: 6509335
DOCUMENT-IDENTIFIER: US 6509335 B1
**** See image for Certificate of Correction ****

TITLE: Benzoxazinoes/benzothiazinones as serine protease inhibitors

DATE-ISSUED: January 21, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Berryman; Kent Alan	Gunnison	CO		
Downing; Dennis Michael	Ann Arbor	MI		
Dudley; Danette Andrea	Ann Arbor	MI		
Edmunds; Jeremy John	Ypsilanti	MI		
Narasimhan; Lakshmi Sourirajan	Canton	MI		
Rapundalo; Stephen Taras	Ann Arbor	MI		

US-CL-CURRENT: 514/230.5; 514/105, 514/224.2, 514/225.2, 514/225.5, 514/225.8, 514/226.2, 514/52

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 9. Document ID: US 6410536 B1

L88: Entry 9 of 17 File: USPT Jun 25, 2002

US-PAT-NO: 6410536
DOCUMENT-IDENTIFIER: US 6410536 B1
**** See image for Certificate of Correction ****

TITLE: Quinoxalinones as serine protease inhibitors such as factor XA and thrombin

DATE-ISSUED: June 25, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dudley; Danette Andrea	Ann Arbor	MI		
Edmunds; Jeremy John	Ypsilanti	MI		

US-CL-CURRENT: 514/249; 514/234.8, 544/116, 544/354

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 10. Document ID: US 6323202 B1

L88: Entry 10 of 17 File: USPT Nov 27, 2001

US-PAT-NO: 6323202
DOCUMENT-IDENTIFIER: US 6323202 B1

TITLE: HSV primase inhibitors

DATE-ISSUED: November 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Simoneau; Bruno	Laval			CA
Liuzzi; Michele	Outremont			CA
Mentrup; Anton	Mainz-Kastel			DE

US-CL-CURRENT: 514/237.5; 514/255.01, 514/315, 514/428, 514/616, 514/617, 544/162, 544/165, 548/562, 564/164, 564/170, 564/175, 564/176, 564/177, 564/179

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 11. Document ID: US 6251928 B1

L88: Entry 11 of 17 File: USPT Jun 26, 2001

US-PAT-NO: 6251928
DOCUMENT-IDENTIFIER: US 6251928 B1

TITLE: Treatment of alzheimer's disease employing inhibitors of cathepsin D

DATE-ISSUED: June 26, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Panetta; Jill A.	Zionsville	IN		
Phillips; Michael L.	Indianapolis	IN		
Reel; Jon K.	Carmel	IN		
Shadle; John K.	Fishers	IN		
Sigmund; Sandra K.	Indianapolis	IN		

Simon; Richard L.	Greenwood	IN
Whitesitt; Celia A.	Greenwood	IN

US-CL-CURRENT: 514/369; 548/183

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 12. Document ID: US 5747517 A

L88: Entry 12 of 17 File: USPT May 5, 1998

US-PAT-NO: 5747517
DOCUMENT-IDENTIFIER: US 5747517 A
**** See image for Certificate of Correction ****

TITLE: Benzylidene rhodanines

DATE-ISSUED: May 5, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Panetta; Jill A.	Zionsville	IN		
Phillips; Michael L.	Indianapolis	IN		
Reel; Jon K.	Carmel	IN		
Shadle; John K.	Fishers	IN		
Sigmund; Sandra K.	Indianpolis	IN		
Simon; Richard L.	Greenwood	IN		
Whitesitt; Celia A.	Greenwood	IN		

US-CL-CURRENT: 514/369; 548/183

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 13. Document ID: US 5670479 A

L88: Entry 13 of 17 File: USPT Sep 23, 1997

US-PAT-NO: 5670479
DOCUMENT-IDENTIFIER: US 5670479 A

TITLE: .alpha.-ketoamide derivatives as inhibitors of thrombosis

DATE-ISSUED: September 23, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Abelman; Matthew M.	Solana Beach	CA		
Pearson; Daniel A.	Bedford	NH		
Vlasuk; George P.	Carlsbad	CA		

Webb; Thomas R.	Encinitas	CA

US-CL-CURRENT: 514/12; 424/1.69, 424/9.341, 514/13, 530/324, 530/325, 530/326

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 14. Document ID: US 5656600 A

L88: Entry 14 of 17 File: USPT Aug 12, 1997

US-PAT-NO: 5656600
DOCUMENT-IDENTIFIER: US 5656600 A

TITLE: .alpha.-ketoamide derivatives as inhibitors of thrombosis

DATE-ISSUED: August 12, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Abelman; Matthew M.	Solana Beach	CA		
Pearson; Daniel A.	Solana Beach	CA		
Vlasuk; George P.	Carlsbad	CA		
Webb; Thomas R.	Encinitas	CA		

US-CL-CURRENT: 514/13; 424/1.69, 424/9.341, 514/12, 530/324, 530/325, 530/326

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 15. Document ID: US 5113865 A

L88: Entry 15 of 17 File: USPT May 19, 1992

US-PAT-NO: 5113865
DOCUMENT-IDENTIFIER: US 5113865 A

TITLE: Method and apparatus for correction of phase distortion in MR imaging system

DATE-ISSUED: May 19, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Maeda; Akira	Gardena	CA		
Kasama; Takashi	Yokohama			JP
Yokoyama; Tetsuo	Tokyo			JP
Nishimura; Hiroshi	Kashiwa			JP

US-CL-CURRENT: 600/410; 324/307, 324/309, 600/419

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw D

☐ 16. Document ID: US 20050033153 A1, WO 2004097387 A2

L88: Entry 16 of 17 File: DWPI Feb 10, 2005

DERWENT-ACC-NO: 2004-804834
DERWENT-WEEK: 200512

TITLE: Image construction method using magnetic resonance imaging data, involves processing MRI image data and deblurring water/fat images as function of off-resonance frequency of signals

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

☐ 17. Document ID: US 20050017717 A1, WO 2004086060 A2

L88: Entry 17 of 17 File: DWPI Jan 27, 2005

DERWENT-ACC-NO: 2004-728789
DERWENT-WEEK: 200509

TITLE: Magnetic resonance imaging optimizing method involves determining chemical species e.g. water and fat at image location of scanned object, based on estimated off-resonance effects e.g. field inhomogeneity in images

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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Search Results - Record(s) 1 through 4 of 4 returned.

☐ 1. Document ID: US 20050033153 A1

L89: Entry 1 of 4 File: PGPB Feb 10, 2005

PGPUB-DOCUMENT-NUMBER: 20050033153
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050033153 A1

TITLE: Dixon Techniques in spiral trajectories with off-resonance correction

PUBLICATION-DATE: February 10, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Moriguchi, Hisamoto	Cleveland	OH	US	
Lewin, Jonathan S.	Baltimore	MD	US	
Duerk, Jeffrey L.	Avon Lake	OH	US	

US-CL-CURRENT: 600/410

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 20050017717 A1

L89: Entry 2 of 4 File: PGPB Jan 27, 2005

PGPUB-DOCUMENT-NUMBER: 20050017717
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050017717 A1

TITLE: Chemical species suppression for MRI imaging using spiral trajectories with off-resonance correction

PUBLICATION-DATE: January 27, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Duerk, Jeffrey L.	Avon Lake	OH	US	
Lewin, Jonathan S.	Baltimore	MD	US	
Moriguchi, Hisamoto	Cleveland	OH	US	

US-CL-CURRENT: 324/307; 324/306, 324/309

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20050033153 A1, WO 2004097387 A2

L89: Entry 3 of 4 File: DWPI Feb 10, 2005

DERWENT-ACC-NO: 2004-804834
DERWENT-WEEK: 200512

TITLE: Image construction method using magnetic resonance imaging data, involves processing MRI image data and deblurring water/fat images as function of off-resonance frequency of signals

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 4. Document ID: US 20050017717 A1, WO 2004086060 A2

L89: Entry 4 of 4 File: DWPI Jan 27, 2005

DERWENT-ACC-NO: 2004-728789
DERWENT-WEEK: 200509

TITLE: Magnetic resonance imaging optimizing method involves determining chemical species e.g. water and fat at image location of scanned object, based on estimated off-resonance effects e.g. field inhomogeneity in images

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Term	Documents
DIXON	31805
DIXONS	39
OFF	3434112
OFFS	27158
HELIX	88248
HELICES	18973
HELIXES	3508
TRAJECTORY	56621
TRAJECTORIES	17064
TRAJECTORYS	5
(L88 AND ((DIXON) WITH (SPIRAL$2 OR ARCHIMED$4 OR	

(OFF WITH CENTER$3) OR HELIX OR HELICAL$2 OR ((CURV$3 OR ROTAT$4) WITH (TRAJECTORY OR PATH OR PROFILE))))).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	4

There are more results than shown above. Click here to view the entire set.

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Previous Page Next Page Go to Doc#

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Monday, July 18, 2005

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ	
☐	L15	L14 and (spiral$2 or curv$4 or helix or helical$2)	5
☐	L14	L12 and (separate with (fat or water) with imag$4)	17
☐	L13	L12 and (spiral$2 or curv$4 or helix or helical$2)	13
☐	L12	L11 and ("te" or (time with echo) or interecho or inter-echo)	38
☐	L11	L10 and (water with image)	43
☐	L10	L9 and (fat$3 with image)	47
☐	L9	L8 and (deblur$4 or blur$4 or alias$4 or ghost$3 or haze or artefact or artifact or inhomogeneit$3 or inhomogeneous or susceptibil$4)	61
☐	L8	L5 and (kspace or k-space or "k space" or "kx" or "ky" or "kz" or raw)	81
☐	L7	L6 and (kspace or k-space or "k space" or "kx" or "ky" or "kz" or raw)	31
☐	L6	L5 and (spiral$2 or curv$4 or helix or helical$2)	86
☐	L5	L4 and ((magnetic adj resonance) or MRI or NMR)	221
☐	L4	L3 and (water with select$4)	1235
☐	L3	L2 and (fat with select$4)	4300
☐	L2	L1 and (suppress$4 or cancel$4 or null$4 or eliminat$4)	74977
☐	L1	((fat or water) with (select$4))	234597

END OF SEARCH HISTORY

NPL STIC

Search for Spiral acquisition with Dixon Processing

Only Applicant's own later filed work & Current Application were found

Prior Art does not use Spiral Data Collection for Dixon MRI Signal processing

Ex. TAF
7/21/2005

```
SYSTEM:OS  - DIALOG OneSearch
  File   2:INSPEC 1969-2005/Jul W2
         (c) 2005 Institution of Electrical Engineers
  File   6:NTIS 1964-2005/Jul W2
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  File  34:SciSearch(R) Cited Ref Sci 1990-2005/Jul W2
         (c) 2005 Inst for Sci Info
  File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
  File  35:Dissertation Abs Online 1861-2005/Jun
         (c) 2005 ProQuest Info&Learning
  File  65:Inside Conferences 1993-2005/Jul W3
         (c) 2005 BLDSC all rts. reserv.
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         (c)2005 Japan Science and Tech Corp(JST)
  File  99:Wilson Appl. Sci & Tech Abs 1983-2005/Jun
         (c) 2005 The HW Wilson Co.
  File 144:Pascal 1973-2005/Jul W1
         (c) 2005 INIST/CNRS
  File 305:Analytical Abstracts 1980-2005/Jul W2
         (c) 2005 Royal Soc Chemistry
*File 305: Alert feature enhanced for multiple files, duplicate
removal, customized scheduling.  See HELP ALERT.
  File 315:ChemEng & Biotec Abs 1970-2005/Jun
         (c) 2005 DECHEMA
  File 350:Derwent WPIX 1963-2005/UD,UM &UP=200545
         (c) 2005  Thomson Derwent
*File 350: For more current information, include File 331 in your search.
Enter HELP NEWS 331 for details.
  File 347:JAPIO Nov 1976-2005/Feb(Updated 050606)
         (c) 2005 JPO & JAPIO
  File 344:Chinese Patents Abs Aug 1985-2005/May
         (c) 2005 European Patent Office
  File 371:French Patents 1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.
*File 371: This file is not currently updating. The last update is 200209.
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See attached Databases Search History & Results

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Set     Items   Description
S1        388   AU=(DUERK, J? OR DUERK J?)
S2       1312   AU=(LEWIN, J? OR LEWIN J?)
S3       1692   AU=(MORIGUCHI, H? OR MORIGUCHI H?)
S4       3121   S1:S3
S5         25   S4 AND (SPIRAL? OR HELIX? OR HELIC? OR CONCENTRIC? OR ARCH-
              IMED? OR OFF()CENTER? OR NON()LINEAR? OR NONLINEAR?)(2N)(DIXON
                OR IMAG?)
S6         21   S5 AND (MRI OR MAGNETIC(1W)(IMAG? OR IMAGING) OR MAGNETIC(-
              W)RESONAN? OR NMR  OR NUCLEAR()MAGNETIC()RESONANCE OR FTNMR OR
                FTMRI OR MAGNETORESONANCE OR PMR OR PROTON(W)MAGNETIC(W)RESO-
              NAN? OR MR()(IMAGE? OR IMAGING))
S7         14   RD (unique items)
S8          4   S5 NOT S6
S9          0   S8 AND (MC=(S01-E02A2 OR S03-E07A OR S01-E02A8A OR S01-E02-
              A1 OR S03-E07C OR S05-D02B1 OR S03-C02F1) OR IC=(G01R-003 OR -
              G01N-024/08 OR G01V-003/A75) OR CC=(A0758 OR A8760I OR B7510N-
              ))
S10         0   S8 AND IC=(G01R-003/54B3 OR G01R-033/565K)
S11         1   S8 AND (FAT(2N)SUPPRESS? OR CHEMICAL()SPECIES(2N)SUPPRESS?)
S12         3   S8 NOT S11
S13         3   RD (unique items)
S14     11838   (SPIRAL? OR HELIX? OR HELIC? OR CONCENTRIC? OR ARCHIMED? OR
                OFF()CENTER? OR NON()LINEAR? OR NONLINEAR?)(2N)(DIXON OR IMA-
              G?)
S15         1   SPIRAL?(2N)3PD
S16     36007   (SPIRAL? OR CURV? OR ROTAT?)(2N)(TRAJECTOR? OR PATH? OR PR-
              OFIL?)
S17   1075895   MRI OR MAGNETIC(1W)(IMAG? OR IMAGING) OR MAGNETIC(W)RESONA-
              N? OR NMR  OR NUCLEAR()MAGNETIC()RESONANCE OR FTNMR OR FTMRI -
              OR MAGNETORESONANCE OR PMR OR PROTON(W)MAGNETIC(W)RESONAN? OR
              MR()(IMAGE? OR IMAGING)
S18     45308   MC=(S01-E02A2 OR S03-E07A OR S01-E02A8A OR S01-E02A1 OR S0-
              3-E07C OR S05-D02B1 OR S03-C02F1) OR IC=(G01R-003 OR G01N-024-
              /08 OR G01V-003/A75) OR CC=(A0758 OR A8760I OR B7510N)
S19   1091285   S17:S18
S20      3601   FAT(2N)SUPPRESS? OR CHEMICAL()SPECIES(2N)SUPPRESS?
S21     35873   IC=(G01R-003/54B3 OR G01R-033/565K)
S22         2   SPIRAL?(5N)3PD
S23       148   S14 AND S16
S24       104   S23 AND S19
S25         5   S24 AND S20
S26         4   RD (unique items)
S27        99   S24 NOT S25
S28         1   S27 AND S21
S29        98   S27 NOT S28
S30        59   RD (unique items)
S31         0   S30 AND 3PD
S32         0   S30 AND SPIRAL?(2N)DIXON
S33         9   SPIRAL?(4N)DIXON
S34         8   S33 AND (MRI OR MAGNETIC(1W)(IMAG? OR IMAGING) OR MAGNETIC-
              (W)RESONAN? OR NMR  OR NUCLEAR()MAGNETIC()RESONANCE OR FTNMR -
              OR FTMRI OR MAGNETORESONANCE OR PMR OR PROTON(W)MAGNETIC(W)RE-
              SONAN? OR MR()(IMAGE? OR IMAGING))
S35         5   RD (unique items)
S36         0   S35 NOT S25,S5
S37         0   S30 AND S21
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S38	0	**S30 AND S22**
S39	59	**S30 NOT S33**
S40	0	**S39 AND DIXON**

7/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

8259651 INSPEC Abstract Number: A2005-05-8760I-084, B2005-03-7510N-018, C2005-03-7330-430
Title: Fast **Spiral** two-point **Dixon** technique using block regional off-resonance correction
Author(s): **Moriguchi, H.; Lewin, J.S.; Duerk, J.L.**
Author Affiliation: Dept. of Radiol., Case Western Reserve Univ., Cleveland, OH, USA
Journal: Magnetic Resonance in Medicine vol.52, no.6 p.1342-50
Publisher: Wiley,
Publication Date: Dec. 2004 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200412)52:6L.1342:FSPD;1-L
Material Identity Number: K620-2005-001
U.S. Copyright Clearance Center Code: 0740-3194/2004/$3.00
Language: English
Abstract: The **Spiral** two-point **Dixon** (**Spiral** 2PD) technique has recently been proposed as a method for unambiguous water-fat decomposition in **spiral imaging** . It also corrects for off-resonance blurring artifacts using only two data sets. In the Spiral 2PD technique, several predetermined off-resonance frequencies are tested to both separate water and fat signals and deblur the decomposed images. Unfortunately, the algorithm is computationally quite intensive since the range of tested frequencies must be set sufficiently large to span the full range of anticipated B/sub 0/ variation over the scanned objects. The block regional off-resonance correction (BRORC) algorithm corrects for off-resonance blurring artifacts block by block through the reconstructed image and usually provides several times higher computational efficiency than the conventional frequency-segmented off-resonance correction algorithm. This work shows that both water-fat decomposition and blurring artifact correction can be performed block by block using two **spiral images** with different TEs and that this new technique (BRORC-Spiral 2PD technique) significantly improves the computational efficiency of other Spiral 2PD algorithms, opening new opportunities for **spiral imaging**.
Subfile: A B C

7/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

7985958 INSPEC Abstract Number: A2004-14-8760I-029, B2004-07-7510N-057, C2004-07-5260B-632
Title: Evaluation of noise effects in **spiral MRI image** reconstruction using perceptual difference model (PDM)
Author(s): Donglai Huo; Wilson, D.L.; Salem, K.A.; **Moriguchi, H.**
Author Affiliation: Dept. of Biomed. Eng., Case Western Reserve Univ., Cleveland, OH, USA
Conference Title: Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE Cat. No.03CH37439) Part Vol.1 p.486-9 Vol.1
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2003 Country of Publication: USA 4295 pp.
ISBN: 0 7803 7789 3 Material Identity Number: XX-2004-00270
U.S. Copyright Clearance Center Code: 0-7803-7789-3/03/$17.00

Conference Title: Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Conference Sponsor: Whitaker Found
Conference Date: 17-21 Sept. 2003 Conference Location: Cancun, Mexico
Language: English
Abstract: Spiral sampling of k-space is a popular **magnetic resonance imaging** (**MRI**) technique. A variety of choices are available for optimizing the spiral trajectory and reconstruction methods. To evaluate the effects of noise on these choices, we used a Perceptual Difference Model (PDM), which evaluates the image quality by calculating the visual difference between a "test image" and a "gold standard image". We simulated images from six different interleave patterns, seven different sampling levels, four different density compensation methods, and three different reconstruction options under three noise levels. Noise effects were separated from reconstruction errors by comparing results to those from a noise-free spiral acquisition. Comparing many different conditions, Voronoi (VOR) plus conventional regridding was good for high SNR data. In low SNR conditions, Area Density Function (ADF) was better. One can also quantitatively compare different acquisition parameters; smaller numbers of interleaves and high number of samples were very desirable when noise was applied. We conclude that PDM scoring provides an objective, useful tool for the assessment of **spiral MR image** quality and can greatly aid the design of MR acquisition and signal processing strategies.
Subfile: A B C

7/3,AB/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

7951269 INSPEC Abstract Number: A2004-12-8760I-019, B2004-06-7510N-036, C2004-06-7330-145
Title: Block regional off-resonance correction (BRORC): a fast and effective deblurring method for **spiral imaging**
Author(s): **Moriguchi, H.**; Dale, B.M.; **Lewin, J.S.**; **Duerk, J.L.**
Author Affiliation: Dept. of Radiol., Univ. Hosp. of Cleveland, OH, USA
Journal: Magnetic Resonance in Medicine vol.50, no.3 p.643-8
Publisher: Wiley,
Publication Date: Sept. 2003 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200309)50:3L.643:BRRC;1-G
Material Identity Number: K620-2003-009
U.S. Copyright Clearance Center Code: 0740-3194/2003/$3.00
Language: English
Abstract: One primary disadvantage of **spiral imaging** is blurring artifact due to off-resonance effects. The conventional frequency segmented off-resonance correction method that is performed over the entire image is computationally intense due to the large number of fast Fourier transforms (FFTs) required. Here, a new fast off-resonance correction method, block regional off-resonance correction (BRORC), is presented. In this method, off-resonance correction proceeds block-by-block through the reconstructed image with FFTs performed on matrices that are smaller than the full image matrix. The BRORC algorithm is typically several times more computationally efficient than the conventional off-resonance correction algorithm. Additional computational reductions can be expected for the BRORC if only specific image regions require deblurring. The newly proposed off-resonance correction method offers significant speed advantages and

equivalent image quality when compared to conventional off-resonance correction methods.
  Subfile: A B C

 7/3,AB/4   (Item 4 from file: 2)
DIALOG(R)File   2:INSPEC

7903356   INSPEC Abstract Number: A2004-09-8760I-021, B2004-04-7510N-051, C2004-04-7330-382
  Title: **Dixon** techniques in **spiral** trajectories with off-resonance correction: a new approach for fat signal suppression without spatial-spectral RF pulses
  Author(s): **Moriguchi, H.; Lewin, J.S.; Duerk, J.L.**
  Author Affiliation: Dept. of Radiol., Case Western Reserve Univ., Cleveland, OH, USA
  Journal: Magnetic Resonance in Medicine   vol.50, no.5   p.915-24
  Publisher: Wiley,
  Publication Date: Nov. 2003 Country of Publication: USA
  CODEN: MRMEEN ISSN: 0740-3194
  SICI: 0740-3194(200311)50:5L.915:DTST;1-Y
  Material Identity Number: K620-2003-011
  Language: English
  Abstract: **Spiral imaging** has recently gained acceptance in MR applications requiring rapid data acquisition. One of the main disadvantages of **spiral imaging**, however, is blurring artifacts that result from off-resonance effects. Spatial-spectral (SPSP) pulses are commonly used to suppress those spins that are chemically shifted from water and lead to off-resonance artifacts. However, SPSP pulses may produce nonuniform fat signal suppression or unwanted water signal suppression when applied in the presence of B/sub o/ field inhomogeneities. Dixon techniques have been developed as methods for water-fat signal decomposition in rectilinear sampling schemes since they can produce unequivocal water-fat signal decomposition even in the presence of B/sub o/ inhomogeneities. This article demonstrates that three-point and two-point Dixon techniques can be extended to conventional spiral and variable-density spiral data acquisitions for unambiguous water-fat decomposition with off-resonance blurring correction. In the **spiral** three-point **Dixon** technique, water-fat signal decomposition and image deblurring are performed based on the frequency maps that are directly derived from the acquired **images** . In the **spiral** two-point **Dixon** technique, several predetermined frequencies are tested to create a frequency map. The newly proposed techniques can achieve more effective and more uniform fat signal suppression when compared to the conventional spiral acquisition method with SPSP pulses.
  Subfile: A B C

 7/3,AB/5   (Item 5 from file: 2)
DIALOG(R)File   2:INSPEC

7900392   INSPEC Abstract Number: A2004-09-8760I-005, B2004-04-7510N-037, C2004-04-7330-326
  Title: Perceptual difference paradigm for analyzing image quality of fast **MRI** techniques
  Author(s): Wilson, D.L.; Salem, K.A.; Donglai Huo; **Duerk, J.L.**

Author Affiliation: Dept. of Biomed. Eng., Case Western Reserve Univ., Cleveland, OH, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.5034 p.297-308
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 2003 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2003)5034L.297:PDPA;1-V
Material Identity Number: C574-2003-181
U.S. Copyright Clearance Center Code: 0277-786X/03/$15.00
Conference Title: Medical Imaging 2003. Image Perception, Observer Performance, and Technology Assessment
Conference Sponsor: SPIE
Conference Date: 18-20 Feb. 2003 Conference Location: San Diego, CA, USA
Language: English
Abstract: We are developing a method to objectively quantify image quality and applying it to the optimization of fast **magnetic resonance imaging** methods. In **MRI,** to capture the details of a dynamic process, it is critical to have both high temporal and spatial resolution. However, there is typically a trade-off between the two, making the sequence engineer choose to optimize imaging speed or spatial resolution. In response to this problem, a number of different fast **MRI** techniques have been proposed. To evaluate different fast **MRI** techniques quantitatively, we use a perceptual difference model (PDM) that incorporates various components of the human visual system. The PDM was validated using subjective image quality ratings by naive observers and task-based measures as defined by radiologists. Using the PDM, we investigated the effects of various imaging parameters on image quality and quantified the degradation due to novel imaging techniques including keyhole, keyhole Dixon fat suppression, and **spiral imaging.** Results have provided significant information about imaging time versus quality tradeoffs aiding the MR sequence engineer. The PDM has been shown to be an objective tool for measuring image quality and can be used to determine the optimal methodology for various imaging applications.
Subfile: A B C

7/3,AB/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

7866966 INSPEC Abstract Number: A2004-06-8760I-048, B2004-03-7510N-098, C2004-03-7330-307
Title: Novel interleaved **spiral imaging** motion correction technique using orbital navigators
Author(s): **Moriguchi, H.; Lewin, J.S.; Duerk, J.L.**
Author Affiliation: Dept. of Radiol., Univ. Hosp. of Cleveland & Case Western Reserve Univ., OH, USA
Journal: Magnetic Resonance in Medicine vol.50, no.2 p.423-8
Publisher: Wiley,
Publication Date: Aug. 2003 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200308)50:2L.423:NISI;1-T
Material Identity Number: K620-2003-008
U.S. Copyright Clearance Center Code: 0740-3194/2003/$30.00
Language: English
Abstract: Although **spiral imaging** seldom produces apparent

artifacts related to flow, it remains sensitive to rapid object motion. In this article, a new correction method is presented for rapid rigid body motion in interleaved **spiral imaging**. With this technique, an identical circular navigator k-space trajectory is linked to each spiral trajectory. Data inconsistency due to both rotation and translation among spiral interleaves can be corrected by evaluating the magnitudes and phases of the data contained in the navigator "ring." Further, it is difficult to create a frequency field map for off-resonance correction when an object moves during a scan, because there is motion-dependent misregistration between the two images acquired with different TEs. However, this difficulty can be overcome by combining the motion-correction method with a recently proposed technique (off-resonance correction using variable-density spirals (ORC-VDS)), thereby enabling both motion compensation and off-resonance correction with no additional scanning.

Subfile: A B C

7/3,AB/7 (Item 7 from file: 2)

DIALOG(R)File 2:INSPEC

7337322 INSPEC Abstract Number: A2002-18-8760I-001, B2002-09-7510N-014, C2002-09-7330-156

Title: Optimization of noisy nonuniform sampling and image reconstruction for fast **MRI** using a human vision model

Author(s): Salem, K.A.; **Moriguchi, H.; Duerk, J.L.**; Wilson, D.L.

Author Affiliation: Dept. of Biomed. Eng., Case Western Reserve Univ., Cleveland, OH, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.4324 p.82-90

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 2001 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(2001)4324L.82:ONNS;1-X

Material Identity Number: C574-2001-257

U.S. Copyright Clearance Center Code: 0277-786X/01/$15.00

Conference Title: Medical Imaging 2001: Image Perception and Performance

Conference Sponsor: SPIE

Conference Date: 21-22 Feb. 2001 Conference Location: San Diego, CA, USA

Language: English

Abstract: We are developing clinical **magnetic resonance imaging** (**MRI**) strategies using spiral acquisition techniques that sample k-space nonuniformly. These methods require a regridding process. Multiple regridding and reconstruction algorithms have been proposed, and we use a perceptual difference model (PDM) to optimize them. We acquired sixteen in vivo MR brain images and simulated reconstruction from a spiral k-space trajectory. Regridding was done by the conventional method of Jackson et al. (1991, 1992), the block uniform resampling algorithm (BURS), and a newly developed method named matrix rescaling. Each of 16 reference images was reconstructed with multiple parameter sets resulting in a total of over 800 different **images**. The **spiral MR images** were compared to the original, fully sampled image using a PDM. Of the three reconstruction methods, the conventional and high-level matrix rescaling methods produce high quality images, but the latter method executed much faster. BURS worked only in extremely low-noise instances, making it often inappropriate. We also demonstrated the effect

of display parameters, such as grayscale windowing on image quality. We believe that the PDM techniques provide a promising tool for the evaluation of **MR image** quality that can aid the engineering design process.
Subfile: A B C

7/3,AB/8 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06772011
E.I. No: EIP04138077704
Title: Evaluation of Noise Effects in **Spiral MRI Image** Reconstruction Using the Perceptual Difference Model (PDM)
Author: Huo, Donglai; Wilson, David L.; Salem, Kyle A.; **Moriguchi, Hisamoto**
Corporate Source: Department of Biomedical Engineering Case Western Reserve University, Cleveland, OH, United States
Conference Title: A New Beginning for Human Health: Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Conference Location: Cancun, Mexico Conference Date: 20030917-20030921
E.I. Conference No.: 62435
Source: Annual International Conference of the IEEE Engineering in Medicine and Biology - Proceedings v 1 2003. (IEEE cat n 03CH37439)
Publication Year: 2003
CODEN: CEMBAD ISSN: 0589-1019
Language: English
Abstract: Spiral sampling of k-space is a popular **magnetic resonance imaging** (**MRI**) technique. A variety of choices are available for optimizing the spiral trajectory and reconstruction methods. To evaluate the effects of noise on these choices, we used a Perceptual Difference Model (PDM), which evaluates the image quality by calculating the visual difference between a "test image" and a "gold standard image." We simulated images from six different interleave patterns, seven different sampling levels, four different density compensation methods, and three different reconstruction options under three noise levels. Noise effects were separated from reconstruction errors by comparing results to those from a noise-free spiral acquisition. Comparing many different conditions, Voronoi (VOR) plus conventional regridding was good for high SNR data. In low SNR conditions, Area Density Function (ADF) was better. One can also quantitatively compare different acquisition parameters; smaller numbers of interleaves and high number of samples were very desirable when noise was applied. We conclude that PDM scoring provides an objective, useful tool for the assessment of **spiral MR image** quality and can greatly aid the design of MR acquisition and signal processing strategies. 21 Refs.

7/3,AB/9 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

04995245 Genuine Article#: UY078 Number of References: 16
Title: ANEURYSM CLIP TESTING FOR FERROMAGNETIC PROPERTIES - CLIP VARIABILITY ISSUES (Abstract Available)
Author(s): KANAL E; SHELLOCK FG; **LEWIN JS**
Corporate Source: UNIV PITTSBURGH,MED CTR,DEPT RADIOL,200 LOTHROPST,RM D

132/PITTSBURGH//PA/15213; UNIV SO CALIF,DEPT RADIOL/LOS ANGELES//CA/90089; UNIV CLEVELAND HOSP,DEPT RADIOL/CLEVELAND//OH/44106; CASE WESTERN RESERVE UNIV/CLEVELAND//OH/44106
Journal: RADIOLOGY, 1996, V200, N2 (AUG), P576-578
ISSN: 0033-8419
Language: ENGLISH   Document Type: ARTICLE.
Abstract: To assess ferromagnetic properties of intracranial aneurysm clips reported to be nonferromagnetic, 1,765 Yasargil, 11 Sugita, and 15 Pemeczky aneurysm clips were studied for rotation or translation on plate glass in a 1.5-T **MR imager**. Sixty-three clips (52 Yasargil, 11 Perneczky) weakly reoriented along the static **magnetic resonance** (MR) field. These results confirm the need for standardized testing for ferromagnetic properties for implantable metallic devices.

7/3,AB/10   (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01991074 AADAAI3118147
Improvements in spiral MR reconstruction and imaging
  Author: **Moriguchi, Hisamoto**
  Degree: Ph.D.
  Year: 2004
  Corporate Source/Institution: Case Western Reserve University (0042)
  Source: VOLUME 64/12-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
           PAGE 6192. 327 PAGES

Spiral magnetic resonance imaging is a newly developed fast data acquisition technique that has gained in popularity over the past decade. Spiral **MRI** collects data over a large portion of k-space (**MRI** data space in the spatial frequency domain) in a spiral fashion after a single excitation. **Spiral imaging** has been shown to be insensitive to flow artifacts and has found a niche in cardiac imaging and angiography. However, **spiral imaging** has several drawbacks: It is sensitive to main magnetic field inhomogeneity which leads to image blurring (off-resonance effects); The fat signal is usually suppressed using spatially and spectrally selective (SPSP) RF pulses in **spiral imaging**. However, SPSP RF pulses often lead to non-uniform fat signal suppression and undesirable water signal suppression in the presence of magnetic field inhomogeneity. Although **spiral imaging** is a very fast imaging technique, if a moving object is scanned, there are often observable motion artifacts in the reconstructed images. Therefore, further reduction of acquisition time is desirable as time reductions help to reduce motion artifacts.

Research in this project is aimed at overcoming the disadvantages described above and thereby advancing the current state-of-the-art condition of **spiral imaging** techniques. Off-resonance blurring artifacts are one primary disadvantage of **spiral imaging**. Hence, it is one of the most important issues throughout this project to develop efficient and effective off-resonance correction methods for several spiral data acquisition techniques. With conventional spiral acquisition techniques, new off-resonance correction algorithms have been developed that require reduced computations compared to the conventional off-resonance correction algorithms. The previously developed water-fat decomposition methods in rectilinear acquisition have been combined with the new fast off-resonance correction method. These methods provide uniform fat signal suppression with reduced acquisition time in **spiral imaging**. A new **spiral** reconstruction algorithm for parallel

data acquisition has been developed. This algorithm is significantly simplified from the previously proposed comparable algorithms and thus provides a computation time advantage as they obviate the need for convolution-based gridding procedures. All of these newly developed techniques have improved the accuracy of measurements in MR cardiac applications with reduced acquisition time compared with the conventional spiral techniques.

7/3,AB/11 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

15620619 PASCAL No.: 02-0324874
Optimization of noisy nonuniform sampling and image reconstruction for fast **MRI** using a human vision model
Image perception and performance : San Diego CA, 21-22 February 2001
SALERN Kyle A; **MORIGUCHI Hisamoto; DUERK Jeffrey L**; WILSON David L
KRUPINSKI Elizabeth A, ed; CHAKRABORTY Dev P, ed
Department of Biomedical Engineering, Case Western Reserve University, United States; Department of Radiology, Case Western Reserve University and University Hospitals of Cleveland, United States
International Society for Optical Engineering, Bellingham WA, United States
Image perception and performance. Conference (San Diego CA USA) 2001-02-21
Journal: SPIE proceedings series, 2001, 4324 82-90
Language: English
We are developing clinical **magnetic resonance imaging** (**MRI**) strategies using spiral acquisition techniques that sample k-space nonuniformly. These methods require a regridding process. Multiple regridding and reconstruction algorithms have been proposed, and we use a perceptual difference model (PDM) to optimize them. We acquired sixteen in vivo MR brain images and simulated reconstruction from a spiral k-space trajectory. Regridding was done by the conventional method of Jackson et al., SUP 1 SUP , SUP 2 the block uniform resampling algorithm (BURS), SUP 3 and a newly developed method named matrix rescaling. SUP 4 Each of 16 reference images was reconstructed with multiple parameter sets resulting in a total of over 800 different **images**. The **spiral MR images** were compared to the original, fully sampled image using a PDM. Of the three reconstruction methods, the conventional and high-level matrix rescaling methods produce high quality images, but the latter method executed much faster. BURS worked only in extremely low-noise instances, making it often inappropriate. We also demonstrated the effect of display parameters, such as grayscale windowing on image quality. We believe that the PDM techniques provide a promising tool for the evaluation of **MR image** quality that can aid the engineering design process.

7/3,AB/12 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

15399337 PASCAL No.: 02-0089454
Modified block uniform resampling (BURS) algorithm using truncated singular value decomposition: Fast accurate gridding with noise and artifact reduction

MORIGUCHI Hisamoto; DUERK Jeffrey L
Department of Radiology, University Hospitals of Cleveland and Case Western Reserve University, Cleveland, Ohio, United States; Department of Biomedical Engineering, University Hospitals of Cleveland and Case Western Reserve University, Cleveland, Ohio, United States
Journal: Magnetic resonance in medicine, 2001, 46 (6) 1189-1201
Language: English
The block uniform resampling (BURS) algorithm is a newly proposed regridding technique for nonuniformly-sampled k-space **MRI** . Even though it is a relatively computationally intensive algorithm, since it uses singular value decomposition (SVD), its procedure is simple because it requires neither a prenor a postcompensation step. Furthermore, the reconstructed image is generally of high quality since it provides accurate gridded values when the local k-space data SNR is high. However, the BURS algorithm is sensitive to noise. Specifically, inaccurate interpolated data values are often generated in the BURS algorithm if the original k-space data are corrupted by noise, which is virtually guaranteed to occur to some extent in **MRI** . As a result, the reconstructed image quality is degraded despite excellent performance under ideal conditions. In this article, a method is presented which avoids inaccurate interpolated k-space data values from noisy sampled data with the BURS algorithm. The newly proposed technique simply truncates a series of singular values after the SVD is performed. This reduces the computational demand when compared with the BURS algorithm, avoids amplification of noise resulting from small singular values, and leads to image SNR improvements over the original BURS algorithm.

7/3,AB/13 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016646121
WPI Acc No: 2004-804834/200479
XRPX Acc No: N04-634419
Image construction method using **magnetic resonance imaging** data, involves processing **MRI** image data and deblurring water/fat images as function of off-resonance frequency of signals
Patent Assignee: UNIV CASE WESTERN RESERVE (UYCA-N)
Inventor: **DUERK J L; LEWIN J S; MORIGUCHI H**
Number of Countries: 108 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200497387	A2	20041111	WO 2004US12858	A	20040426	200479	B
US 20050033153	A1	20050210	US 2003465551	P	20030425	200512	
			US 2004832659	A	20040426		

Priority Applications (No Type Date): US 2003465551 P 20030425; US 2004832659 A 20040426
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200497387	A2	E	38	G01N-024/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Designated States (Regional): AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
US 20050033153 A1 A61B-005/05 Provisional application US 2003465551

Abstract (Basic): WO 200497387 A2
Abstract (Basic):

NOVELTY - A spiral trajectory is employed to acquire the **magnetic resonance image** (**MRI**) data. The off-resonance frequency for voxels of respective pixels in an image are determined. The image data is processed to generate water and fat images. The images are deblurred for off-resonance frequency.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for system for constructing image from **MRI** data set.

USE - For constructing image from **MRI** data set using variable density **spiral**-three joint **Dixon** (VDS-3PD) techniques.

ADVANTAGE - Eliminates the artifacts such as non-uniform fat signal suppression and undesirable water signal suppression using VD3-3PD techniques.

DESCRIPTION OF DRAWING(S) - The figure shows a simplified sequence diagram of **spiral** three front **Dixon** technique.

data sets (12,14,18)
delay period (20)
data component (22)
echo component (24)
pp; 38 DwgNo 1/9

7/3,AB/14 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016570052
WPI Acc No: 2004-728789/200471
XRPX Acc No: N04-577174

Magnetic resonance imaging optimizing method involves determining chemical species e.g. water and fat at image location of scanned object, based on estimated off-resonance effects e.g. field inhomogeneity in images

Patent Assignee: DUERK J L (DUER-I); LEWIN J S (LEWI-I); MORIGUCHI H (MORI-I); UNIV CASE WESTERN RESERVE (UYCA-N)
Inventor: **DUERK J L; LEWIN J S; MORIGUCHI H**
Number of Countries: 108 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200486060	A2	20041007	WO 2004US8636	A	20040322	200471	B
US 20050017717	A1	20050127	US 2003456333	P	20030320	200509	
			US 2004805841	A	20040322		

Priority Applications (No Type Date): US 2003456333 P 20030320; US 2004805841 A 20040322
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200486060	A2	E	30	G01R-000/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG BW CH CY CZ DE DK EA EE ES FI FR

GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PL PT RO SD SE SI SK SL SZ
TR TZ UG ZM ZW
US 20050017717 A1 G01V-003/00 Provisional application US 2003456333

Abstract (Basic): WO 200486060 A2
Abstract (Basic):

NOVELTY - The images having off-resonance effects e.g. field inhomogeneity, susceptibility and chemical shift, are reconstructed based on space data acquired by transverse electric (TE) waves. Off resonance effects at location in reconstructed images, are estimated. Water and fat at image location of scanned object, are determined from acquired data to correct the blurring results from the effects due to inhomogeneity.

USE - For optimizing the **magnetic resonance imaging** (**MRI**).

ADVANTAGE - Enables to efficiently determine the chemical species e.g. water and fat at image location of scanned object.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic representation of simplified sequence diagram of **spiral** three-point **Dixon** (**spiral** 3PD) technique.

pp; 30 DwgNo 1/7

11/3,AB/1 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

16642822 PASCAL No.: 04-0293459

Dixon techniques in **spiral** trajectories with off-resonance correction: A new approach for **fat** signal **suppression** without spatial-spectral RF pulses

MORIGUCHI Hisamoto; LEWIN Jonathan S; DUERK Jeffrey L

Department of Radiology, University Hospitals of Cleveland and Case Western Reserve University, Ohio, United States; Department of Biomedical Engineering, Case Western Reserve University, Ohio, United States

Journal: Magnetic resonance in medicine, 2003, 50 (5) 915-924

Language: English

Spiral imaging has recently gained acceptance in MR applications requiring rapid data acquisition. One of the main disadvantages of **spiral imaging**, however, is blurring artifacts that result from off-resonance effects. Spatial-spectral (SPSP) pulses are commonly used to suppress those spins that are chemically shifted from water and lead to off-resonance artifacts. However, SPSP pulses may produce nonuniform **fat** signal **suppression** or unwanted water signal suppression when applied in the presence of B SUB o field inhomogeneities. Dixon techniques have been developed as methods for water-fat signal decomposition in rectilinear sampling schemes since they can produce unequivocal water-fat signal decomposition even in the presence of B SUB o inhomogeneities. This article demonstrates that three-point and two-point Dixon techniques can be extended to conventional spiral and variable-density spiral data acquisitions for unambiguous water-fat decomposition with off-resonance blurring correction. In the **spiral** three-point **Dixon** technique, water-fat signal decomposition and image deblurring are performed based on the frequency maps that are directly derived from the acquired **images**. In the **spiral** two-point **Dixon** technique, several predetermined frequencies are tested to create a frequency map. The newly proposed techniques can achieve more effective and more uniform **fat** signal **suppression** when compared to the conventional spiral acquisition method with SPSP pulses.

13/3,AB/1 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

13289243 Genuine Article#: 865EQ Number of References: 20
Title: Volumetric assessment of pulmonary nodules with ECG-gated MDCT (ABSTRACT AVAILABLE)
Author(s): Boll DT (REPRINT) ; Gilkeson RC; Fleiter TR; Blackham KA; **Duerk JL; Lewin JS**
Corporate Source: Case Western Reserve Univ,Univ Hosp Cleveland, Dept Radiol,11100 Euclid Ave/Cleveland//OH/44106 (REPRINT); Case Western Reserve Univ,Univ Hosp Cleveland, Dept Radiol,Cleveland//OH/44106(boll@uhrad.com)
Journal: AMERICAN JOURNAL OF ROENTGENOLOGY, 2004, V183, N5 (NOV), P 1217-1223
ISSN: 0361-803X Publication date: 20041100
Publisher: AMER ROENTGEN RAY SOC, 1891 PRESTON WHITE DR, SUBSCRIPTION FULFILLMENT, RESTON, VA 22091 USA
Language: English Document Type: ARTICLE
Abstract: OBJECTIVE. The objective of our study was to assess physiologic lung deformation and compression originating from cardiovascular motion and their subsequent impact on determining the volume of small pulmonary nodules throughout the cardiac cycle on ECG-gated MDCT

SUBJECTS AND METHODS. Seventy-three small noncalcified pulmonary nodules were identified in 30 patients who underwent ECG-gated MDCT. The volume of each nodule was assessed throughout the cardiac cycle using computer-aided automatic segmentation algorithms, and the assessment was repeated three times. To ensure the validity of the subtle changes in volume that were detected, we determined the volume and signal attenuation in phantom data sets and patient nodules without temporal or spatial differentiation. Subsequently, nodules were assigned to pulmonary segments, and volume changes were correlated to cardiac phases, nodular location, and mean nodular size. Statistical multivariate tests were performed to evaluate significant patterns.

RESULTS. The validity of significant measurements was proven in evaluated phantom data sets with a general tendency toward overestimating nodular volume ($p = 0.492$). Statistical evaluation of nodular signal attenuation confirmed true deformation and compression of nodules rather than partial volume effects as the reason for volume variations ($p = 0.874$). Differentiating pulmonary nodules in cardiac phases, pulmonary locations, and mean nodular volumes, we found that one single effect did not determine the amount of cardiovascular motion conveyed to pulmonary parenchyma and subsequently led to nodule deformation. Multivariate testing revealed statistically significant measures identifying patterns correlating variation in nodular volume with cardiac phase ($p < 0.001$), nodular location ($p = 0.007$), and mean nodular size ($p < 0.001$).

CONCLUSION. Cardiovascular motion was disproportionately conveyed to various pulmonary segments and led to changes in the volume of pulmonary nodules, especially in small pulmonary nodules. A precise volumetric assessment was therefore possible only by identifying the underlying cardiac phase.

13/3,AB/2 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

16328115 PASCAL No.: 03-0492668
Block regional off-resonance correction (BRORC): A fast and effective deblurring method for **spiral imaging**
MORIGUCHI Hisamoto; DALE Brian M; **LEWIN Jonathan S; DUERK Jeffrey L**
Department of Radiology, University Hospitals of Cleveland and Case Western Reserve University, Cleveland, Ohio, United States; Department of Biomedical Engineering, Case Western Reserve University, Cleveland, Ohio, United States
Journal: Magnetic resonance in medicine, 2003, 50 (3) 643-648
Language: English
One primary disadvantage of **spiral imaging** is blurring artifact due to off-resonance effects. The conventional frequency segmented off-resonance correction method that is performed over the entire image is computationally intense due to the large number of fast Fourier transforms (FFTs) required. Here, a new fast off-resonance correction method, block regional off-resonance correction (BRORC), is presented. In this method, off-resonance correction proceeds block-by-block through the reconstructed image with FFTs performed on matrices that are smaller than the full image matrix. The BRORC algorithm is typically several times more computationally efficient than the conventional off-resonance correction algorithm. Additional computational reductions can be expected for the BRORC if only specific image regions require deblurring. The newly proposed off-resonance correction method offers significant speed advantages and equivalent image quality when compared to conventional off-resonance correction methods.

13/3,AB/3 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

16325387 PASCAL No.: 03-0489940
Novel interleaved **spiral imaging** motion correction technique using orbital navigators
MORIGUCHI Hisamoto; LEWIN Jonathan S; DUERK Jeffrey L
Department of Radiology, University Hospitals of Cleveland and Case Western Reserve University, Cleveland, Ohio, United States; Department of Biomedical Engineering, Case Western Reserve University, Cleveland, Ohio, United States
Journal: Magnetic resonance in medicine, 2003, 50 (2) 423-428
Language: English
Although **spiral imaging** seldom produces apparent artifacts related to flow, it remains sensitive to rapid object motion. In this article, a new correction method is presented for rapid rigid body motion in interleaved **spiral imaging** . With this technique, an identical circular navigator k-space trajectory is linked to each spiral trajectory. Data inconsistency due to both rotation and translation among spiral interleaves can be corrected by evaluating the magnitudes and phases of the data contained in the navigator "ring." Further, it is difficult to create a frequency field map for off-resonance correction when an object moves during a scan, because there is motion-dependent misregistration between the two images acquired with different TEs. However, this difficulty can be overcome by combining the motion-correction method with a recently proposed technique (off-resonance correction using variable-density spirals (ORC-VDS)), thereby enabling both motion compensation and off-resonance correction with no additional scanning.

26/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7903356 INSPEC Abstract Number: A2004-09-8760I-021, B2004-04-7510N-051, C2004-04-7330-382
Title: **Dixon** techniques in **spiral trajectories** with off-resonance correction: a new approach for **fat** signal **suppression** without spatial-spectral RF pulses
Author(s): Moriguchi, H.; Lewin, J.S.; Duerk, J.L.
Author Affiliation: Dept. of Radiol., Case Western Reserve Univ., Cleveland, OH, USA
Journal: Magnetic Resonance in Medicine vol.50, no.5 p.915-24
Publisher: Wiley,
Publication Date: Nov. 2003 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200311)50:5L.915:DTST;1-Y
Material Identity Number: K620-2003-011
Language: English
Abstract: **Spiral imaging** has recently gained acceptance in MR applications requiring rapid data acquisition. One of the main disadvantages of **spiral imaging**, however, is blurring artifacts that result from off-resonance effects. Spatial-spectral (SPSP) pulses are commonly used to suppress those spins that are chemically shifted from water and lead to off-resonance artifacts. However, SPSP pulses may produce nonuniform **fat** signal **suppression** or unwanted water signal suppression when applied in the presence of B/sub o/ field inhomogeneities. Dixon techniques have been developed as methods for water-fat signal decomposition in rectilinear sampling schemes since they can produce unequivocal water-fat signal decomposition even in the presence of B/sub o/ inhomogeneities. This article demonstrates that three-point and two-point Dixon techniques can be extended to conventional spiral and variable-density spiral data acquisitions for unambiguous water-fat decomposition with off-resonance blurring correction. In the **spiral** three-point **Dixon** technique, water-fat signal decomposition and image deblurring are performed based on the frequency maps that are directly derived from the acquired **images**. In the **spiral** two-point **Dixon** technique, several predetermined frequencies are tested to create a frequency map. The newly proposed techniques can achieve more effective and more uniform **fat** signal **suppression** when compared to the conventional spiral acquisition method with SPSP pulses.
Subfile: A B C

26/3,AB/2 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

06083458 Genuine Article#: XU166 Number of References: 6
Title: Spiral spin-echo **magnetic resonance imaging** of the pelvis with spectrally and spatially selective radiofrequency excitation: Comparison with fat-saturated fast spin-echo imaging (ABSTRACT AVAILABLE)
Author(s): Yacoe ME; Li KCP (REPRINT) ; Cheung L; Meyer CH
Corporate Source: STANFORD UNIV,MED CTR, DEPT RADIOL/STANFORD//CA/94305 (REPRINT); STANFORD UNIV,MED CTR, DEPT RADIOL/STANFORD//CA/94305; STANFORD UNIV,DEPT ELECT ENGN, MAGNET RESONANCE SYST RES LAB/STANFORD//CA/94305
Journal: CANADIAN ASSOCIATION OF RADIOLOGISTS JOURNAL-JOURNAL DE L

ASSOCIATION CANADIENNE DES RADIOLOGISTES, 1997, V48, N4 (AUG), P247-251
ISSN: 0846-5371 Publication date: 19970800
Publisher: CANADIAN MEDICAL ASSOCIATION, 1867 ALTA VISTA DR, OTTAWA ON K1G 3Y6, CANADA
Language: English Document Type: ARTICLE
Abstract: Objective: The authors describe their initial clinical experience in comparing a spiral spin-echo technique with a fat-saturated fast spin-echo technique for imaging the pelvis. Methods: A total of 18 patients were **imaged** with both **spiral** spin-echo and fat-saturated fast spin-echo **magnetic resonance imaging**. The **spiral** spin-echo technique combines a spectrally and spatially selective radiofrequency excitation with a **spiral** k-space **trajectory**. This technique permits rapid acquisition of T-2-weighted water-only **images**. Results: The **spiral** spin-echo **images** were judged superior to the fat-saturated fast spin-echo images in terms of uniformity of **fat suppression** and absence of flow-related artifacts. However, the overall image quality of the **spiral** spin-echo **images** was inferior to that of the fat-saturated fast spin-echo images, as a result of blurring caused by off-resonance effects. The two techniques were judged equivalent in terms of conspicuity of the abnormality and diagnostic information. Conclusion: The authors conclude that the spiral spin-echo technique holds promise, particularly if combined with a deblurring algorithm.

26/3,AB/3 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

05690417 Genuine Article#: WQ667 Number of References: 39
Title: RARE spiral T-2-weighted imaging (ABSTRACT AVAILABLE)
Author(s): Block W (REPRINT) ; Pauly J; Nishimura D
Corporate Source: STANFORD UNIV,DEPT ELECT ENGN, MAGNET RESONANCE SYST RES LAB, 303 DURAND BLDG/STANFORD//CA/94305 (REPRINT)
Journal: MAGNETIC RESONANCE IN MEDICINE, 1997, V37, N4 (APR), P582-590
ISSN: 0740-3194 Publication date: 19970400
Publisher: WILLIAMS & WILKINS, 351 WEST CAMDEN ST, BALTIMORE, MD 21201-2436
Language: English Document Type: ARTICLE
Abstract: **Spiral imaging** has a number of advantages for fast imaging, including an efficient use of gradient hardware. However, inhomogeneity-induced blurring is proportional to the data acquisition duration. In this paper, we combine spiral data acquisition with a RARE echo train. This allows a long data acquisition interval per excitation, while limiting the effects of inhomogeneity. Long **spiral** k-space **trajectories** are partitioned into smaller, annular ring trajectories. Each of these annular rings is acquired during echoes of a RARE echo train. The RARE refocusing RF pulses periodically refocus off-resonant spins while building a long data acquisition. We describe both T-2-weighted single excitation and interleaved RARE spiral sequences. A typical sequence acquires a complete data set in three excitations (32 cm FOV, 192 x 192 matrix). At a TR = 2000 ms, we can average two acquisitions in an easy breath-hold interval. A multifrequency reconstruction algorithm minimizes the effects of any off-resonant spins. Though this algorithm needs a field map, we demonstrate how signal averaging can provide the necessary phase data while increasing SNR. The field map creation causes no scan time penalty and essentially no loss in SNR efficiency. Multiple slice, 14-s breath-hold scans acquired on a conventional gradient system demonstrate the performance.

26/3,AB/4 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016646121
WPI Acc No: 2004-804834/200479
XRPX Acc No: N04-634419

Image construction method using **magnetic resonance imaging** data, involves processing **MRI** image data and deblurring water/fat images as function of off-resonance frequency of signals

Patent Assignee: UNIV CASE WESTERN RESERVE (UYCA-N)
Inventor: DUERK J L; LEWIN J S; MORIGUCHI H
Number of Countries: 108 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200497387	A2	20041111	WO 2004US12858	A	20040426	200479	B
US 20050033153	A1	20050210	US 2003465551	P	20030425	200512	
			US 2004832659	A	20040426		

Priority Applications (No Type Date): US 2003465551 P 20030425; US 2004832659 A 20040426
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200497387	A2	E	38	G01N-024/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050033153	A1			A61B-005/05	Provisional application US 2003465551

Abstract (Basic): WO 200497387 A2
Abstract (Basic):

NOVELTY - A **spiral trajectory** is employed to acquire the **magnetic resonance image** (**MRI**) data. The off-resonance frequency for voxels of respective pixels in an image are determined. The image data is processed to generate water and fat images. The images are deblurred for off-resonance frequency.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for system for constructing image from **MRI** data set.

USE - For constructing image from **MRI** data set using variable density **spiral**-three joint **Dixon** (VDS-3PD) techniques.

ADVANTAGE - Eliminates the artifacts such as non-uniform **fat** signal **suppression** and undesirable water signal suppression using VD3-3PD techniques.

DESCRIPTION OF DRAWING(S) - The figure shows a simplified sequence diagram of **spiral** three front **Dixon** technique.

data sets (12,14,18)
delay period (20)
data component (22)
echo component (24)
pp; 38 DwgNo 1/9

28/3,AB/1   (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010546052
WPI Acc No: 1996-043005/199605
XRPX Acc No: N96-036026

Magnetic resonance imaging appts **spiral** scanning
- collecting data in order to form main part of k-space along with **spiral trajectory** which spreads in shape of spiral to termination of k-space, which forms simple echo centre NoAbstract

Patent Assignee: YOKOGAWA MEDICAL SYSTEMS LTD (YOKM)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 7284485	A	19951031	JP 9480046	A	19940419	199605	B
JP 3472615	B2	20031202	JP 9480046	A	19940419	200402	

Priority Applications (No Type Date): JP 9480046 A 19940419
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 7284485	A		6	A61B-005/055	
JP 3472615	B2		5	A61B-005/055	Previous Publ. patent JP 7284485

30/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

8052883 INSPEC Abstract Number: A2004-18-8760I-025, B2004-09-7510N-063
Title: Improved combination of **spiral**-in/out **images** for BOLD fMRI
Author(s): Glover, G.H.; Thomason, M.E.
Author Affiliation: Dept. of Radiol., Stanford Univ., CA, USA
Journal: Magnetic Resonance in Medicine vol.51, no.4 p.863-8
Publisher: Wiley,
Publication Date: April 2004 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200404)51:4L.863:ICSI;1-3
Material Identity Number: K620-2004-004
U.S. Copyright Clearance Center Code: 0740-3194/2004/$3.00
Language: English
Abstract: Acquisitions with the spiral-in/out technique result in two separate image timeseries obtained during the spiral-in and **spiral** -out **trajectory** . In uniform brain regions the two components have comparable signal and BOLD contrast and can be averaged, but in regions compromised by susceptibility effects where both signal and noise can differ in the two images other combination methods may be more effective, Here, several weighting schemes are compared for signal and activation contrast recovery in whole brain and prefrontal cortex using verbal working memory (seven subjects) and breathholding tasks (six subjects) scanned at 3 T. It was found that a statistically weighted combination based on activation maps derived separately from the spiral-in and **spiral**-out **images** provides activation volumes with increases of 33-59% over second-choice signal-weighted combination and 100-200% increases over spiral-out acquisition alone, and that simple averaging is inferior to signal-weighted combination.
Subfile: A B

30/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

8028296 INSPEC Abstract Number: A2004-17-8760I-069, B2004-08-7510N-097, C2004-08-7330-728
Title: Fast 3D imaging using variable-density **spiral trajectories** with applications to limb perfusion
Author(s): Lee, J.H.; Hargreaves, B.A.; Hu, B.S.; Nishimura, D.G.
Author Affiliation: Dept. of Electr. Eng., Stanford Univ., CA, USA
Journal: Magnetic Resonance in Medicine vol.50, no.6 p.1276-85
Publisher: Wiley,
Publication Date: Dec. 2003 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200312)50:6L.1276:FIUV;1-U
Material Identity Number: K620-2003-012
Language: English
Abstract: Variable-density k-space sampling using a stack-of-**spirals trajectory** is proposed for ultra fast 3D imaging. Since most of the energy of an image is concentrated near the k-space origin, a variable-density k-space sampling method can be used to reduce the sampling density in the outer portion of k-space. This significantly reduces scan time while introducing only minor aliasing artifacts from the low-energy, high-spatial-frequency components. A stack-of-**spirals trajectory**%%

% allows control over the density variations in both the k/sub x/-k/sub y/ plane and the k/sub z/ direction while fast k-space coverage is provided by spiral trajectories in the k/sub x/-k/sub y/plane. A variable-density stack-of-spirals trajectory consists of variable-density spirals in each k/sub x/-k /sub y/ plane that are located in varying density in the k/sub z/ direction. Phantom experiments demonstrate that reasonable image quality is preserved with approximately half the scan time. This technique was then applied to first-pass perfusion imaging of the lower extremities which demands very rapid volume coverage. Using a variable-density stack-of-spirals trajectory, 3D images were acquired at a temporal resolution of 2.8 sec over a large volume with a 2.5*2.5*8 mm/sup 3/ spatial resolution. These images were used to resolve the time-course of muscle intensity following contrast injection.

Subfile: A B C

30/3,AB/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

8028281 INSPEC Abstract Number: A2004-17-8760I-058, B2004-08-7510N-088

Title: Out-and-in spiral spectroscopic imaging in rat brain at 7 T

Author(s): Hiba, B.; Faure, B.; Lamalle, L.; Decorps, M.; Ziegler, A.
Author Affiliation: Laboratoire mixte INSERM, Univ. Joseph Fourier "Neuroimagerie fonctionnelle et metabolique", Grenoble, France

Journal: Magnetic Resonance in Medicine vol.50, no.6 p.1127-33
Publisher: Wiley,
Publication Date: Dec. 2003 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200312)50:6L.1127:SSIB;1-5
Material Identity Number: K620-2003-012
Language: English

Abstract: With standard spectroscopic imaging, high spatial resolution is achieved at the price of a large number of phase-encoding steps, leading to long acquisition times. Fast spatial encoding methods reduce the minimum total acquisition time. In this article, a k-space scanning scheme using a continuous series of growing and shrinking, or "out-and-in," spiral trajectories is implemented and the feasibility of spiral spectroscopic imaging for animal models at high B/sub o/ field is demonstrated. This method was applied to rat brain at 7 T. With a voxel size of about 8.7 mu l (as calculated from the point-spread function), a 30*30 matrix, and a spectral bandwidth of 11 kHz, the minimum scan time was 9 min 20 sec for a signal-to-noise ratio of 7.1 measured on the N-acetylaspartate peak.

Subfile: A B

30/3,AB/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

7985958 INSPEC Abstract Number: A2004-14-8760I-029, B2004-07-7510N-057, C2004-07-5260B-632

Title: Evaluation of noise effects in spiral MRI image reconstruction using perceptual difference model (PDM)

Author(s): Donglai Huo; Wilson, D.L.; Salem, K.A.; Moriguchi, H.

Author Affiliation: Dept. of Biomed. Eng., Case Western Reserve Univ., Cleveland, OH, USA
Conference Title: Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE Cat. No.03CH37439) Part Vol.1 p.486-9 Vol.1
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2003 Country of Publication: USA 4295 pp.
ISBN: 0 7803 7789 3 Material Identity Number: XX-2004-00270
U.S. Copyright Clearance Center Code: 0-7803-7789-3/03/$17.00
Conference Title: Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Conference Sponsor: Whitaker Found
Conference Date: 17-21 Sept. 2003 Conference Location: Cancun, Mexico
Language: English
Abstract: Spiral sampling of k-space is a popular magnetic resonance imaging (MRI) technique. A variety of choices are available for optimizing the spiral trajectory and reconstruction methods. To evaluate the effects of noise on these choices, we used a Perceptual Difference Model (PDM), which evaluates the image quality by calculating the visual difference between a "test image" and a "gold standard image". We simulated images from six different interleave patterns, seven different sampling levels, four different density compensation methods, and three different reconstruction options under three noise levels. Noise effects were separated from reconstruction errors by comparing results to those from a noise-free spiral acquisition. Comparing many different conditions, Voronoi (VOR) plus conventional regridding was good for high SNR data. In low SNR conditions, Area Density Function (ADF) was better. One can also quantitatively compare different acquisition parameters; smaller numbers of interleaves and high number of samples were very desirable when noise was applied. We conclude that PDM scoring provides an objective, useful tool for the assessment of spiral MR image quality and can greatly aid the design of MR acquisition and signal processing strategies.
Subfile: A B C

30/3,AB/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

7902831 INSPEC Abstract Number: A2004-09-0230-022, C2004-04-4240C-046
Title: An improved gridding method for spiral MRI using fast Fourier transform
Author(s): Sha, L.; Guo, H.; Song, A.W.
Author Affiliation: Dept. of Electr. & Comput. Eng., Duke Univ., Durham, NC, USA
Journal: Journal of Magnetic Resonance vol.162, no.2 p.250-8
Publisher: Academic Press,
Publication Date: June 2003 Country of Publication: USA
CODEN: JOMRA4 ISSN: 1090-7807
SICI: 1090-7807(200306)162:2L.250:IGMS;1-T
Material Identity Number: J153-2003-008
U.S. Copyright Clearance Center Code: 1090-7807/2003/$30.00
Language: English
Abstract: The algorithm of Liu and Nguyen [IEEE Microw. Guided Wave Lett. 8 (1) (1998) 18; SIAM J. Sci. Comput. 21 (1) (1999) 283] for nonuniform fast Fourier transform (NUFFT) has been extended to two dimensions to reconstruct images using spiral MRI. The new gridding method, called LS_NUFFT, minimizes the reconstruction approximation error

in the Least Square sense by generated convolution kernels that fit for the spiral k-space trajectories . For analytical comparison, the LS_NUFFT has been fitted into a consistent framework with the conventional gridding methods using Kaiser-Bessel gridding and a recently proposed generalized FFT (GFFT) approach. Experimental comparison was made by assessing the performance of the LS_NUFFT with that of the standard direct summation method and the Kaiser-Bessel gridding method, using both digital phantom data and in vivo experimental data. Because of the explicitly optimized convolution kernel in LS_NUFFT, reconstruction results showed that the LS_NUFFT yields smaller reconstruction approximation error than the Kaiser-Bessel gridding method, but with the same computation complexity

Subfile: A C

30/3,AB/6 (Item 6 from file: 2)

DIALOG(R)File 2:INSPEC

7866966 INSPEC Abstract Number: A2004-06-8760I-048, B2004-03-7510N-098, C2004-03-7330-307

Title: Novel interleaved spiral imaging motion correction technique using orbital navigators

Author(s): Moriguchi, H.; Lewin, J.S.; Duerk, J.L.

Author Affiliation: Dept. of Radiol., Univ. Hosp. of Cleveland & Case Western Reserve Univ., OH, USA

Journal: Magnetic Resonance in Medicine vol.50, no.2 p.423-8

Publisher: Wiley,

Publication Date: Aug. 2003 Country of Publication: USA

CODEN: MRMEEN ISSN: 0740-3194

SICI: 0740-3194(200308)50:2L.423:NISI;1-T

Material Identity Number: K620-2003-008

U.S. Copyright Clearance Center Code: 0740-3194/2003/$30.00

Language: English

Abstract: Although spiral imaging seldom produces apparent artifacts related to flow, it remains sensitive to rapid object motion. In this article, a new correction method is presented for rapid rigid body motion in interleaved spiral imaging. With this technique, an identical circular navigator k-space trajectory is linked to each spiral trajectory. Data inconsistency due to both rotation and translation among spiral interleaves can be corrected by evaluating the magnitudes and phases of the data contained in the navigator "ring." Further, it is difficult to create a frequency field map for off-resonance correction when an object moves during a scan, because there is motion-dependent misregistration between the two images acquired with different TEs. However, this difficulty can be overcome by combining the motion-correction method with a recently proposed technique (off-resonance correction using variable-density spirals (ORC-VDS)), thereby enabling both motion compensation and off-resonance correction with no additional scanning.

Subfile: A B C

30/3,AB/7 (Item 7 from file: 2)

DIALOG(R)File 2:INSPEC

7337322 INSPEC Abstract Number: A2002-18-8760I-001, B2002-09-7510N-014, C2002-09-7330-156

Title: Optimization of noisy nonuniform sampling and image reconstruction for fast MRI using a human vision model
Author(s): Salem, K.A.; Moriguchi, H.; Duerk, J.L.; Wilson, D.L.
Author Affiliation: Dept. of Biomed. Eng., Case Western Reserve Univ., Cleveland, OH, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.4324 p.82-90
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 2001 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4324L.82:ONNS;1-X
Material Identity Number: C574-2001-257
U.S. Copyright Clearance Center Code: 0277-786X/01/$15.00
Conference Title: Medical Imaging 2001: Image Perception and Performance
Conference Sponsor: SPIE
Conference Date: 21-22 Feb. 2001 Conference Location: San Diego, CA, USA
Language: English
Abstract: We are developing clinical magnetic resonance imaging (MRI) strategies using spiral acquisition techniques that sample k-space nonuniformly. These methods require a regridding process. Multiple regridding and reconstruction algorithms have been proposed, and we use a perceptual difference model (PDM) to optimize them. We acquired sixteen in vivo MR brain images and simulated reconstruction from a spiral k-space trajectory. Regridding was done by the conventional method of Jackson et al. (1991, 1992), the block uniform resampling algorithm (BURS), and a newly developed method named matrix rescaling. Each of 16 reference images was reconstructed with multiple parameter sets resulting in a total of over 800 different images. The spiral MR images were compared to the original, fully sampled image using a PDM. Of the three reconstruction methods, the conventional and high-level matrix rescaling methods produce high quality images, but the latter method executed much faster. BURS worked only in extremely low-noise instances, making it often inappropriate. We also demonstrated the effect of display parameters, such as grayscale windowing on image quality. We believe that the PDM techniques provide a promising tool for the evaluation of MR image quality that can aid the engineering design process.
Subfile: A B C

30/3,AB/8 (Item 8 from file: 2)
DIALOG(R)File 2:INSPEC

7222308 INSPEC Abstract Number: A2002-09-8760I-031, B2002-05-7510N-010, C2002-05-7330-034
Title: Quiet imaging with interleaved spiral read-out
Author(s): Oesterle, C.; Hennel, F.; Hennig, R.
Author Affiliation: Dept. of Radiol., Univ. Hosp., Freiburg, Germany
Journal: Magnetic Resonance Imaging vol.19, no.10 p.1333-7
Publisher: Elsevier,
Publication Date: Dec. 2001 Country of Publication: USA
CODEN: MRIMDQ ISSN: 0730-725X
SICI: 0730-725X(200112)19:10L.1333:QIWI;1-E
Material Identity Number: F149-2002-002
U.S. Copyright Clearance Center Code: 0730-725X/01/$20.00
Language: English

Abstract: The acoustic noise generated during an MRI sequence can be effectively reduced with the help of soft gradient pulses using sinusoidal ramps. The long slope duration, however, leads to long acquisition times. The use of interleaved spiral trajectories, calculated with long gradient slopes, is proposed to reduce the acquisition time while maintaining low acoustic noise levels. The practibility of this approach is demonstrated on phantom and volunteer images.

Subfile: A B C

30/3,AB/9 (Item 9 from file: 2)

DIALOG(R)File 2:INSPEC

7207509 INSPEC Abstract Number: B2002-04-6135-160, C2002-04-5260B-214

Title: Platform-independent image reconstruction for spiral magnetic resonance imaging

Author(s): Jan-Ray Liao

Author Affiliation: Dept. of Electr. Eng., Nat. Chung-Hsing Univ., Taichung, Taiwan

Journal: Computer Methods and Programs in Biomedicine vol.67, no.2 p.155-62

Publisher: Elsevier,

Publication Date: Feb. 2002 Country of Publication: Ireland

CODEN: CMPBEK ISSN: 0169-2607

SICI: 0169-2607(200202)67:2L.155:PIIR;1-T

Material Identity Number: G493-2002-002

U.S. Copyright Clearance Center Code: 0169-2607/02/$22.00

Language: English

Abstract: The distinct feature of data acquisition for magnetic resonance imaging (MRI) is that the data are sampled in the frequency domain instead of in the spatial domain. Therefore, the acquired data must be inverse Fourier transformed to generate images. To apply a fast Fourier transform (FFT), the data are usually acquired on rectilinear grids. However, acquiring data on rectilinear grids is not very efficient in MRI. A spiral trajectory, which starts at the origin of the frequency domain and spins out to higher spatial frequency is more efficient and faster than the conventional method. Since the spiral trajectories do not sample on rectilinear grids, the raw data must be re-interpolated on to rectilinear grids prior to the inverse FFT. This re-gridding process is done using a reconstruction program. When the platforms to run the program grow, the efforts required to maintain the program become prohibitive. This problem can be solved through the platform-independent Java programming language. In this paper, we report on our attempt to implement the spiral MRI reconstruction program in Java. We show that the performance is not significantly affected and that it is practical to use platform-independent reconstruction software.

Subfile: B C

30/3,AB/10 (Item 10 from file: 2)

DIALOG(R)File 2:INSPEC

7089901 INSPEC Abstract Number: A2001-24-8760I-042, B2001-12-7510N-108

Title: Advances in sensitivity encoding with arbitrary k-space trajectories

Author(s): Pruessmann, K.P.; Weiger, M.; Bornert, P.; Boesiger, P.
Author Affiliation: Inst. for Biomed. Eng., Zurich Univ., Switzerland
Journal: Magnetic Resonance in Medicine vol.46, no.4 p.638-51
Publisher: Wiley,
Publication Date: Oct. 2001 Country of Publication: USA
CODEN: MRMEEN ISSN: 0740-3194
SICI: 0740-3194(200110)46:4L.638:ASEW;1-E
Material Identity Number: K620-2001-010
U.S. Copyright Clearance Center Code: 0740-3194/2001/$3.00
Language: English
Abstract: New, efficient reconstruction procedures are proposed for sensitivity encoding (SENSE) with arbitrary k-space trajectories. The presented methods combine gridding principles with so-called conjugate-gradient iteration. In this fashion, the bulk of the work of reconstruction can be performed by fast Fourier transform (FFT), reducing the complexity of data processing to the same order of magnitude as in conventional gridding reconstruction. Using the proposed method, SENSE becomes practical with nonstandard k-space trajectories, enabling considerable scan time reduction with respect to mere gradient encoding. This is illustrated by imaging simulations with spiral, radial, and random k-space patterns. Simulations were also used for investigating the convergence behavior of the proposed algorithm and its dependence on the factor by which gradient encoding is reduced. The in vivo feasibility of non-Cartesian SENSE imaging with iterative reconstruction is demonstrated by examples of brain and cardiac imaging using spiral trajectories. In brain imaging with six receiver coils, the number of spiral interleaves was reduced by factors ranging from 2 to 6. In cardiac real-time imaging with four coils, spiral SENSE permitted reducing the scan time per image from 112 ms to 56 ms, thus doubling the frame-rate.
Subfile: A B

Query/Command : HIS

File : PLUSPAT

SS	Results
1	1 US20050033153/PN
2	2 (1) ..FAM US20050033153/PN
3	1 ..CITF US20050033153/PN
4	1 ..CITB US20050033153/PN

Query/Command : PRT MAX SET

1 / 2 PLUSPAT - ©QUESTEL-ORBIT - image

PN	-	US2005033153 A1 20050210 [US20050033153]
TI	-	(A1) Dixon Techniques in spiral trajectories with off-resonance correction
PA	-	(A1) CASE WESTEM RESERVE UNIVERSITY (US)
PA0	-	Case Westem Reserve University; Cleveland, OH [US]
IN	-	(A1) DUERK JEFFREY L (US); LEWIN JONATHAN S (US); MORIGUCHI HISAMOTO (US)
AP	-	US83265904 20040426 [2004US-0832659]
FD	-	Provisional: US 60465551 - 20030425 [2003US-P465551]
PR	-	US83265904 20040426 [2004US-0832659] US46555103P 20030425 [2003US-P465551]
IC	-	(A1) A61B-005/05
EC	-	G01R-033/565
PCL	-	ORIGINAL (O) : 600410000
DT	-	Basic
STG	-	(A1) Utility Patent Application published on or after January 2, 2001
AB	-	Spiral imaging has recently gained acceptance for rapid MR data acquisition. One of the main disadvantages of spiral imaging, however, is blurring artifacts due to off-resonance effects. Dixon techniques have been developed as methods of water-fat signal decomposition in rectilinear sampling schemes, and they can produce unequivocal water-fat signal decomposition even in the presence of B0 inhomogeneity. Three-point and two-point Dixon techniques can be extended to conventional spiral and variable-density spiral data acquisitions for unambiguous water-fat decomposition with off-resonance blurring correction. In the spiral three-point Dixon technique, water-fat signal decomposition and image deblurring are performed based on the frequency maps that are directly derived from the acquired images. In the spiral two-point Dixon technique, several predetermined frequencies are tested to create a frequency map. The techniques can achieve more effective and more uniform fat signal suppression when compared to the conventional spiral acquisition method with SPSP pulses.
UP	-	2005-06

2 / 2 PLUSPAT - ©QUESTEL-ORBIT - image

PN	-	WO2004097387 A2 20041111 [WO200497387]
PN2	-	WO2004097387 A3 20041216 [WO200497387]
PN3	-	WO2004097387 A9 20050127 [WO200497387]
TI	-	(A2) DIXON TECHNIQUES IN SPIRAL TRAJECTORIES WITH OFF-RESONANCE CORRECTION
OTI	-	(A2) TECHNIQUES DE DIXON DANS DES TRAJECTOIRES EN SPIRALE A CORRECTION DE NON RESONANCE
LA	-	ENGLISH (ENG)
PA	-	(A2) UNIV CASE WESTERN RESERVE (US); DUERK JEFFREY L (US);

LEWIN JONATHAN S (US); MORIGUCHI HISAMOTO (US)

PA0 - CASE WESTERN RESERVE UNIVERSITY; 10900 Euclid Avenue, Cleveland, OH 44106-7219 (US) (except US)
MORIGUCHI, Hisamoto; 11457 Mayfield Road 1257, Cleveland, OH 44106 (US) (only US)
LEWIN, Jonathan, S.; 24604 Letchworth Road, Beachwood, OH 44122 (US) (only US)
DUERK, Jeffrey, L.; 519 Rockwood Court, Avon Lake, OH 44012 (US) (only US)

PA2 - (A3) UNIV CASE WESTERN RESERVE (US); DUERK JEFFREY L (US); LEWIN JONATHAN S (US); MORIGUCHI HISAMOTO (US)

PA3 - (A9) UNIV CASE WESTERN RESERVE (US); DUERK JEFFREY L (US); LEWIN JONATHAN S (US); MORIGUCHI HISAMOTO (US)

IN - (A2) DUERK JEFFREY L (US); LEWIN JONATHAN S (US); MORIGUCHI HISAMOTO (US)

AP - WOUS2004012858 20040426 [2004WO-US12858]

PR - US46555103P 20030425 [2003US-P465551]

IC - (A2) G01N-024/00

EC - G01R-033/565

ICO - S01R-033/54B3

DS - AE; AE (utility model); AG; AL; AL (utility model); AM; AM (provisional patent); AM (utility model); AT; AT (utility model); AU; AZ; AZ (utility model); BA; BB; BG; BG (utility model); BR; BR (utility model); BW; BY; BY (utility model); BZ; BZ (utility model); CA; CH; CN; CN (utility model); CO; CO (utility model); CR; CR (utility model); CU (inventor's certificate); CU; CZ; CZ (utility model); DE; DE (utility model); DK; DK (utility model); DM; DZ; EC; EC (utility model); EE; EE (utility model); EG; EG (utility model); ES; ES (utility model); FI; FI (utility model); GB; GD; GE; GE (utility model); GH; GM; HR (consensual patent); HR; HU; HU (utility model); ID; IL; IN; IS; JP; JP (utility model); KE; KE (utility model); KG; KG (utility model); KP (inventor's certificate); KP; KP (utility model); KR; KR (utility model); KZ; KZ (provisional patent); KZ (utilit; European patent (AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PL; PT; RO; SE; SI; SK; TR); OAPI patent (BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG; BF (utility model); BJ (utility model); CF (utility model); CG (utility model); CI (utility model); CM (utility model); GA (utility model); GN (utility model); GQ (utility model); GW (utility model); ML (utility model); MR (utility model); NE (utility model); SN (utility model); TD (utility model); TG (utility model)); ARIPO patent (BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ; TZ; UG; ZM; ZW); Eurasian patent (AM; AZ; BY; KG; KZ; MD; RU; TJ; TM)

DT - Basic

CT - Cited in the search report
EP950902(A)(Cat. A)
NOLL D C ET AL: "DEBLURRING FOR NON-2D FOURIER TRANSFORM MAGNETIC RESONANCE IMAGING" MAGNETIC RESONANCE IN MEDICINE, ACADEMIC PRESS, DULUTH, MN, US, vol. 25, no. 2, 1 June 1992 (1992-06-01), pages 319-333, XP000275016 ISSN: 0740-3194(Cat. X)

KING K F ET AL: "Concomitant gradient field effects in spiral scans." MAGNETIC RESONANCE IN MEDICINE : OFFICIAL JOURNAL OF THE SOCIETY OF MAGNETIC RESONANCE IN MEDICINE / SOCIETY OF MAGNETIC RESONANCE IN MEDICINE. JAN 1999, vol. 41, no. 1, January 1999 (1999-01), pages 103-112, XP002299312 ISSN: 0740-3194(Cat. A)
IRARRAZABAL P ET AL: "INHOMOGENEITY CORRECTION USING AN ESTIMATED LINEAR FIELD MAP" MAGNETIC RESONANCE IN MEDICINE, ACADEMIC PRESS, DULUTH, MN, US, vol. 35, no. 2, 1 February 1996 (1996-02-01), pages 278-282, XP000580474 ISSN: 0740-3194 (Cat. A)
NAYAK K S ET AL: "Efficient off-resonance correction for spiral imaging" MAGNETIC RESONANCE IN MEDICINE WILEY USA, vol. 45, no. 3, 2001, pages 521-524, XP002299311 ISSN: 0740-3194(Cat. A)
MAN L-C ET AL: "MULTIFREQUENCY INTERPOLATION FOR FAST OFF-RESONANCE CORRECTION" MAGNETIC RESONANCE IN MEDICINE, ACADEMIC PRESS, DULUTH, MN, US, vol. 37, no. 5, 1 May 1997 (1997-05-01), pages 785-792, XP000689182 ISSN: 0740-3194(Cat. A)
GLOVER G H ET AL: "THREE-POINT DIXON TECHNIQUE FOR TRUE WATER/FAT DECOMPOSITION WITH BO INHOMOGENEITY CORRECTION" MAGNETIC RESONANCE IN MEDICINE, ACADEMIC PRESS, DULUTH, MN, US, vol. 18, no. 2, 1 April 1991 (1991-04-01), pages 371-383, XP000209847 ISSN: 0740-3194(Cat. A)

STG - (A2) Publ. Of int. Appl. W/out int. Search rep

STG2 - (A3) Subsqu. Publ. Of int. Search report

STG3 - (A9) Complete corrected document

AB - Spiral imaging has recently gained acceptance for rapid MR data acquisition. One of the main disadvantages of spiral imaging, however, is blurring artifacts due to off--resonance effects. Dixon techniques have been developed as methods of water-fat signal decomposition in rectilinear sampling schemes, and they can produce unequivocal water-fat signal decomposition even in the presence of Bo inhomogeneity. Three-point and two-point Dixon techniques can be extended to conventional spiral and variable-density spiral data acquisitions for unambiguous water-fat decomposition with off-resonance blurring correction. In the spiral three-point Dixon technique, water-fat signal decomposition and image deblurring are performed based on the frequency maps that are directly derived from the acquired images. In the spiral two-point Dixon technique, several predetermined frequencies are tested to create a frequency map. The techniques can achieve more effective and more uniform fat signal suppression when compared to the conventional spiral acquisition method with SPSP pulses.

UP - 2004-46

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Search statement   4
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Query/Command : HIS

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File : PLUSPAT

SS  Results
  1        2  (1) ..FAM US20050017717/PN
  2        1  ..CITF US20050017717/PN
  3        1  ..CITB US20050017717/PN

Search statement   4
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Query/Command : PRT MAX SET

1 / 2 PLUSPAT - ©QUESTEL-ORBIT

PN	-	US2005017717 A1 20050127 [US20050017717]
TI	-	(A1) Chemical species suppression for MRI imaging using spiral trajectories with off-resonance correction
IN	-	(A1) DUERK JEFFREY L (US); LEWIN JONATHAN S (US); MORIGUCHI HISAMOTO (US)
AP	-	US80584104 20040322 [2004US-0805841]
FD	-	Provisional: US 60456333 - 20030320 [2003US-P456333]
PR	-	US80584104 20040322 [2004US-0805841] US45633303P 20030320 [2003US-P456333]
IC	-	(A1) G01V-003/00
EC	-	G01R-033/54B3 G01R-033/565K
PCL	-	ORIGINAL (O) : 324307000; CROSS-REFERENCE (X) : 324306000; 324309000
DT	-	Basic
STG	-	(A1) Utility Patent Application published on or after January 2, 2001
AB	-	A method of chemical species suppression for MRI imaging of a scanned object region including acquiring K space data at a first TE, acquiring K space data at a second TE, reconstructing images having off resonance effects, estimating off resonance effects at locations throughout the reconstructed image, and determining the first and second chemical species signals at image locations of the scanned object from the acquired signals and correcting for blurring resulting from off resonance effects due to B0 inhomogeneity.
UP	-	2005-04

2 / 2 PLUSPAT - ©QUESTEL-ORBIT - image

PN	-	WO2004086060 A2 20041007 [WO200486060]
PN2	-	WO2004086060 A3 20050519 [WO200486060]
TI	-	(A2) CHEMICAL SPECIES SUPPRESSION FOR MRI IMAGING USING SPIRAL TRAJECTORIES WITH OFF-RESONANCE CORRECTION
OTI	-	(A2) SUPPRESSION D'ESPECE CHIMIQUE POUR IMAGERIE IRM METTANT EN OEUVRE DES TRAJECTOIRES EN SPIRALE AVEC CORRECTION HORS RESONANCE
LA	-	ENGLISH (ENG)
PA	-	(A2) UNIV CASE WESTERN RESERVE (US)
PA0	-	CASE WESTERN RESERVE UNIVERSITY; 10900 Euclid Avenue, Cleveland, OH 44106 (US) (except US)
PA2	-	(A3) UNIV CASE WESTERN RESERVE (US)
IN	-	(A2) DUERK JEFFREY L; LEWIN JONATHAN S; MORIGUCHI HISAMOTO
AP	-	WOUS2004008636 20040322 [2004WO-US08636]

PR - US45633303P 20030320 [2003US-P456333]

IC - (A2) G01R

EC - G01R-033/54B3
G01R-033/565K

DS - AE; AE (utility model); AG; AL; AL (utility model); AM; AM (provisional patent); AM (utility model); AT; AT (utility model); AU; AZ; AZ (utility model); BA; BB; BG; BG (utility model); BR; BR (utility model); BW; BY; BY (utility model); BZ; BZ (utility model); CA; CH; CN; CN (utility model); CO; CO (utility model); CR; CR (utility model); CU (inventor's certificate); CU; CZ; CZ (utility model); DE; DE (utility model); DK; DK (utility model); DM; DZ; EC; EC (utility model); EE; EE (utility model); EG; ES; ES (utility model); FI; FI (utility model); GB; GD; GE; GE (utility model); GH; GM; HR (consensual patent); HR; HU; HU (utility model); ID; IL; IN; IS; JP; JP (utility model); KE; KE (utility model); KG; KG (utility model); KP (inventor's certificate); KP; KP (utility model); KR; KR (utility model); KZ; KZ (provisional patent); KZ (utility model); LC; LK; LR; ; European patent (AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PL; PT; RO; SE; SI; SK; TR); OAPI patent (BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG; BF (utility model); BJ (utility model); CF (utility model); CG (utility model); CI (utility model); CM (utility model); GA (utility model); GN (utility model); GQ (utility model); GW (utility model); ML (utility model); MR (utility model); NE (utility model); SN (utility model); TD (utility model); TG (utility model)); ARIPO patent (BW; GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ; UG; ZM; ZW); Eurasian patent (AM; AZ; BY; KG; KZ; MD; RU; TJ; TM)

DT - Basic

CT - Cited in the search report
US6263228(B1)(Cat. X);US5402067(A)(Cat. Y);US6084408(A)(Cat. Y);US6215306(B1)(Cat. X)

STG - (A2) Publ. Of int. Appl. W/out int. Search rep

STG2 - (A3) Subsqu. Publ. Of int. Search report

AB - A method of chemical species suppression for MRI imaging of a scanned object region including acquiring K space data at a first TE, acquiring K space data at a second TE, reconstructing images having off resonance effects, estimating off resonance effects at locations throughout the reconstructed image, and determining the first and second chemical species signals at image locations of the scanned object from the acquired signals and correcting for blurring resulting from off resonance effects due to Bo inhomogeneity.

UP - 2004-41

Search statement 2